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The Gazette of India.

No. 27.]

CALCUTTA, SATURDAY, JULY 6, 1889.

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GOVERNMENT OF INDIA.
DEPARTMENT OF FINANCE AND COMMERCE.

RETAIL PRICES FOR THE FIRST HALF OF MAY 1889.

QUANTITIES PER RUPEE IN SERS OF 80 TOLAS.

DISTRICT.	WHEAT.	BANKEY.	RICE, BEST SOFT.	RICE, COMMON.	JOWAR OR CHOLAM (Sorghum vulgare).	BAJRA OR CUMBU (Pennisetum typhoides).	MANUA OR RAGI (Eleusine coracana).	KANGNU OR MAKUN, ITALUM MILLET (Setaria italica).	MAIZE (Zea Mays).	ARAH OR THUR CADIAN PEAS (Cicer arietinum).	FIRWOOD.	SALT.	Present.				Past.				Present.				Past.				
													S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	
Burma—																													
Tenasserim—																													
Mergui	... 10 2	... 12 3	... 10 4	11 1	11 13	11 13	11 3	11 3	11 3	11 3	11 3	11 3	11 3	11 3	11 3	11 3	11 3	11 3	11 3	11 3	11 3	11 3	11 3	11 3	11 3	11 3	11 3	11 3	
Tavoy	... 10 3	... 12 4	11 13	11 4	14 13	14 0	11 2	12 2	11 2	11 2	11 2	11 2	11 2	11 2	11 2	11 2	11 2	11 2	11 2	11 2	11 2	11 2	11 2	11 2	11 2	11 2	11 2	11 2	
Modimien and Amherst	3 15	3 15	10 8	10 8	10 8	10 8	10 8	10 8	10 8	10 8	10 8	10 8	10 8	10 8	10 8	10 8	10 8	10 8	10 8	10 8	10 8	10 8	10 8	10 8	10 8	10 8	10 8	10 8	
Pegu (delta)—																													
Shwaygyin	10 2	10 3	9 7	9 7	12 6	12 6	10 11	11 3	13 2	13 2	13 2	13 2	13 2	13 2	13 2	13 2	13 2	13 2	13 2	13 2	13 2	13 2	13 2	13 2	13 2	13 2	13 2	13 2	
Tharawadi	10 2	10 3	10 4	10 4	11 15	15 10	15 10	15 10	15 10	15 10	15 10	15 10	15 10	15 10	15 10	15 10	15 10	15 10	15 10	15 10	15 10	15 10	15 10	15 10	15 10	15 10	15 10		
Henthala	10 6	10 6	10 6	10 6	11 3	12 3	13 12	13 12	14 2	14 2	14 2	14 2	14 2	14 2	14 2	14 2	14 2	14 2	14 2	14 2	14 2	14 2	14 2	14 2	14 2	14 2	14 2	14 2	
Prome	10 3	11 3	10 12	10 12	11 11	12 12	9 2	9 2	12 13	12 13	12 13	12 13	12 13	12 13	12 13	12 13	12 13	12 13	12 13	12 13	12 13	12 13	12 13	12 13	12 13	12 13	12 13		
Toungoo	10 11	11 0	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5		
Thayintyo	10 11	11 0	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5		
Upper Burma—																													
Mandalay	10 11	11 0	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5	11 5		
Aragon—																													
Sandoway	10 0	9 4	10 0	10 0	13 7	14 0	14 11	15 5	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0		
Kyeuk-pyu	7 8	7 12	7 8	7 8	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0		
Akyab	8 0	8 0	8 0	8 0	13 0	14 0	16 0	16 0	17 0	17 0	17 0	17 0	17 0	17 0	17 0	17 0	17 0	17 0	17 0	17 0	17 0	17 0	17 0	17 0	17 0	17 0	17 0		
Assam—																													
Surma—	10 0	9 4	10 0	10 0	14 14	14 14	15 12	15 12	15 12	15 12	15 12	15 12	15 12	15 12	15 12	15 12	15 12	15 12	15 12	15 12	15 12	15 12	15 12	15 12	15 12	15 12	15 12		
Sylhet	7 8	7 12	7 8	7 8	12 8	12 8	13 8	13 8	13 8	13 8	13 8	13 8	13 8	13 8	13 8	13 8	13 8	13 8	13 8	13 8	13 8	13 8	13 8	13 8	13 8	13 8	13 8		
Cachar	7	7	7	7	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0		
Khasia and Jaintia Hills	7	7	7	7	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0		
Garo Hills	7	7	7	7	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0		
Brahmaputra—	15 0	16 0	15 0	15 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0	16 0		
Goalpara	10 0	10 0	10 0	10 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0		
Kamrup	7 0	7 0	7 0	7 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0		
Darrang	7 0	7 0	7 0	7 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0		
Nowrangpur	8 0	8 0	8 0	8 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0		
Sibsagar	8 0	8 0	8 0	8 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0	12 0		

SUPPLEMENT TO THE GAZETTE OF INDIA, JULY 6, 1889.

RETAIL PRICES FOR THE 1ST HALF OF MAY 1889—continued.

QUANTITIES PER RUPEE IN SERS OF 80 TOLAS.

Districts.	Wheat.	Barley.	Rice, best sort.	Rice, common.	Jowar or Jolam (Sorghum vulgare).	Bajra or Cimbu (Pennisetum typhoides).	Maru or Bagi (Echinochloa crusgalli).	Kangri or Rakuvi, Italian Millet (Setaria italica).	Gram, Chenna, Chona, Kadav or Susaga (Cicer arietinum).	Natives (See May's Gazette).	Ahar or their Cauhan (Cajanus indicus).			Pithoriyan.			Saly.		
											Present weight.			Present weight.			Present weight.		
											S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	
Bengal—continued.																			
Bhadrak.	16.4	16.13	22.0	10.8	12.9	11.9	13.2	12.5	16.0	16.12	16.12	16.12	16.12	18.36	147.6	10.0	9.8		
Monghyr.	16.6	15.8	23.0	10.8	12.8	11.8	13.8	13.8	16.0	16.12	16.12	16.12	16.12	18.4	200.0	9.2	9.2		
Gya.	15.8	15.0	22.0	10.0	10.0	10.0	13.8	13.8	16.0	16.12	16.12	16.12	16.12	19.0	130.0	10.0	10.0		
Parsa.	14.8	14.8	20.0	10.0	8.8	8.8	13.8	13.8	16.0	16.12	16.12	16.12	16.12	19.0	131.0	10.0	10.0		
Shahabad.	14.8	14.8	20.0	10.0	8.8	8.8	13.8	13.8	16.0	16.12	16.12	16.12	16.12	19.0	131.0	10.0	10.0		
Bihar, north—																			
Parsah.	20.0	14.0	10.0	16.0	13.0	10.0	17.0	13.4	16.0	16.12	16.12	16.12	16.12	18.0	200.0	10.5	9.0		
Rajgarpur.	15.2	16.6	18.15	21.7	11.9	12.10	13.4	13.4	16.0	16.12	16.12	16.12	16.12	18.4	176.12	10.1	10.1		
Durhingia.	13.11	13.11	12.6	19.6	61.0	9.2	10.4	12.9	13.2	17.2	17.2	17.2	17.2	19.6	183.46	11.6	11.6		
Motiharpore.	12.0	12.8	16.0	18.0	61.0	9.0	9.0	11.0	11.0	11.0	11.0	11.0	11.0	19.0	160.0	10.0	10.0		
Sarsai.	13.8	14.8	19.8	30.3	8.8	8.8	13.2	12.14	12.14	16.0	16.0	16.0	16.0	19.8	160.0	9.8	9.8		
Champaran.	11.8	12.0	18.0	21.0	7.0	7.0	10.0	11.8	16.0	16.0	16.0	16.0	16.0	17.0	160.0	9.8	9.8		
N.W. Provinces—																			
Eastern—																			
Mirzapur.	14.0	14.8	19.0	16.0	17.14	17.14	20.0	6.7	7.0	17.0	17.0	17.0	17.0	18.0	110.0	9.0	10.6		
Rewna.	14.6	14.6	23.0	24.0	9.0	9.0	11.0	11.0	11.0	15.7	15.7	15.7	15.7	17.0	120.0	10.6	10.6		
Ghazipur.	15.2	14.0	13.0	16.8	16.8	16.8	17.0	7.0	7.0	15.7	15.7	15.7	15.7	17.0	154.0	9.8	9.8		
Lalitpur.	13.2	14.0	13.0	23.0	24.0	8.0	8.0	10.0	10.0	15.7	15.7	15.7	15.7	17.0	140.0	10.0	10.0		
Allahabad.	13.8	13.8	19.4	10.4	8.0	8.0	11.0	11.0	11.0	16.0	16.0	16.0	16.0	17.0	120.0	10.0	10.0		
Central—																			
Banda.	16.8	16.8	21.0	8.0	32.0	8.0	11.0	11.0	11.0	17.0	17.0	17.0	17.0	18.0	160.0	10.8	10.8		
Patlipur.	17.8	17.8	21.0	20.12	11.8	11.8	11.8	12.0	12.0	17.0	17.0	17.0	17.0	18.0	140.0	11.0	11.0		
Hamipur.	17.13	17.2	23.0	24.0	9.0	9.0	11.0	11.0	11.0	15.7	15.7	15.7	15.7	17.0	140.0	10.0	10.0		
Lalaun.	17.0	17.0	22.0	22.0	9.0	9.0	10.0	10.0	10.0	15.7	15.7	15.7	15.7	17.0	160.0	12.0	12.0		
Cawnpore.	17.0	17.0	23.0	24.0	9.0	9.0	12.0	12.0	12.0	15.7	15.7	15.7	15.7	17.0	120.0	11.0	11.0		
Etiwah.	16.4	16.7	23.0	24.0	7.0	7.0	13.0	13.0	13.0	15.7	15.7	15.7	15.7	17.0	140.0	10.4	10.4		
Farrukhabad.	16.8	16.4	22.0	8.0	23.0	8.0	7.0	7.0	7.0	15.7	15.7	15.7	15.7	17.0	160.0	11.0	11.0		
Mainpuri.	18.6	18.6	19.6	25.4	25.4	25.4	26.0	7.8	7.8	14.8	14.8	14.8	14.8	16.0	160.0	11.0	11.0		
Ritah.	18.4	18.4	18.12	25.2	26.0	26.0	26.0	5.0	5.0	13.0	13.0	13.0	13.0	14.0	160.0	11.4	11.4		
Western—																			
Lalitpur.	16.0	17.0	21.0	23.0	14.0	14.0	9.0	9.0	9.0	15.0	15.0	15.0	15.0	16.0	160.0	10.0	10.0		
Jhansi.	17.0	15.0	15.8	21.0	22.0	22.0	22.0	11.0	11.0	15.0	15.0	15.0	15.0	16.0	180.0	10.8	10.8		
Agra.	15.0	15.0	16.8	22.0	23.0	23.0	23.0	12.0	12.0	15.0	15.0	15.0	15.0	16.0	140.0	11.8	11.8		
Muttra.	15.0	15.0	17.0	23.0	24.0	24.0	24.0	13.0	13.0	15.0	15.0	15.0	15.0	16.0	140.0	10.0	10.0		
Aligarh.	16.8	17.0	24.0	25.0	27.4	27.4	27.4	10.0	10.0	15.0	15.0	15.0	15.0	16.0	160.0	11.0	11.0		
Bulandshahr.	18.0	18.0	17.4	20.0	20.8	20.8	20.8	7.0	7.0	10.0	10.0	10.0	10.0	11.0	120.0	11.4	11.4		
Meerut.	16.0	16.0	16.0	20.0	20.0	20.0	20.0	5.0	5.0	12.0	12.0	12.0	12.0	13.0	100.0	11.0	11.0		
Provinces—																			
Bailia.	15.0	15.0	23.0	8.0	19.8	8.4	9.4	15.8	15.8	20.0	20.0	20.0	20.0	21.0	160.0	10.4	10.4		
Asanagar.	13.5	14.0	12.11	20.1	13.0	13.0	13.0	12.0	12.0	17.0	17.0	17.0	17.0	18.0	177.8	9.15	9.15		
Gorakhpur.	13.0	13.0	17.8	23.0	28.0	28.0	28.0	12.0	12.0	17.0	17.0	17.0	17.0	18.0	140.0	10.0	10.0		
Basti.	16.0	16.0	17.8	23.0	28.0	28.0	28.0	12.0	12.0	17.0	17.0	17.0	17.0	18.0	140.0	10.0	10.0		
Shahdolpur.	17.8	18.0	18.0	25.8	28.0	28.0	28.0	12.0	12.0	17.0	17.0	17.0	17.0	18.0	120.0	10.0	10.0		
Budaun.	18.4	18.4	18.4	25.8	28.0	28.0	28.0	12.0	12.0	17.0	17.0	17.0	17.0	18.0	120.0	10.0	10.0		
Pilibhit.	16.4	16.4	16.4	25.0	25.0	25.0	25.0	12.0	12.0	17.0	17.0	17.0	17.0	18.0	120.0	10.0	10.0		

In subdivisions retail prices of salt rice paper are—
for unhusked grain.

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² In Madhubani and Tajore sub-divisions retail price of salt 10 seers per rupee.

RETAIL PRICES FOR THE 1ST HALF OF MAY 1910—continued.

QUANTITIES PER RUPEE IN SERS OF 80 TOLAS

SUPPLEMENT TO THE GAZETTE OF INDIA, JULY 6, 1889.

793

Firewood is sold by head-loads, cart-loads, and bushels.

3 Not procurable.

Not produced.

Not sold.

RETAIL PRICES FOR THE 1ST HALF OF MAY 1890—concluded.

QUANTITIES PER RUPEE IN SERS OF 80 TOLAS.

QUANTITIES PER HECTARE IN SEED OR IN LEAVES.																	
WHEAT.		BASSET.		RICE, EAST SORT.		RICE, COMMON.		JOWAR OR CHOLUM (Sorghum vulgare).		MILLET (Zea Mays).		MAIZE (Zea Mays).		GRASS, CHENNAI, CHOLAS, KADALAY OR SUNAGA (Cicer arietinum).			
Districts.		S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.		
Madras—																	
Malabar Coast—																	
Malabar.	•	8	10	8	10	11	13	12	16	12	18	20	6	136	2		
S. Canara.	•	8	2	8	8	11	2	11	2	13	21	13	126	13	13	5	
South, central—																	
Comptatore.	•	12	5	12	5	12	16	12	16	13	21	13	20	6	133	10	
Nilgiris.	•	9	14	9	14	10	6	10	6	13	16	13	16	13	134	13	
Salem.	•	10	3	10	3	11	13	11	13	13	21	13	20	6	186	10	
Central—																	
Betulay.	•	13	14	13	6	11	5	11	13	12	16	13	20	11	97	3	
Anantapur.	•	11	8	11	8	13	14	13	14	16	13	16	13	16	194	6	
Cuddapah.	•	12	8	12	8	11	2	11	2	13	21	13	20	6	140	0	
Kurnool.	•	11	6	11	6	11	6	11	2	13	21	13	20	6	142	14	
East Coast, north—																	
Gajam.	•	9	8	9	8	10	0	10	0	12	0	19	0	18	8	264	6
Vizianapatam.	•	13	0	12	0	9	0	9	0	10	3	18	3	18	3	116	10
Golikav.	•	11	11	11	11	13	14	13	14	14	14	21	2	22	13	243	0
East Coast, centre—																	
Nellore.	•	10	6	10	6	11	6	11	6	12	16	21	13	21	13	176	2
Madras.	•	9	14	9	14	11	6	11	6	12	8	23	0	23	0	93	5
Chingleput.	•	10	0	10	10	11	10	11	10	13	6	23	2	23	13	122	8
N. Arcot.	•	9	6	9	6	10	0	10	0	12	3	21	3	21	3	194	6
S. Arcot.	•	8	10	7	13	12	3	12	3	13	3	23	2	23	14	209	0
Tanjore.	•	8	2	8	2	11	12	12	12	13	14	23	14	23	14	166	3
Tiruchirapally.	•	6	14	8	14	12	3	12	3	12	11	24	14	24	14	143	6
Southern—																	
Tirunelvelly.	•	10	11	9	3	11	5	12	11	13	10	22	0	26	5	53	5
Madura.	•	10	2	10	2	13	0	13	0	13	14	22	1	22	0	140	14
Mysoore—																	
Bagallore.	•	10	8	10	8	11	0	9	0	9	8	20	0	20	0	96	0
Kolar.	•	11	0	11	0	10	0	10	0	12	0	23	0	23	0	13	8
Tumkur.	•	10	0	11	0	11	0	12	0	12	0	24	0	24	0	14	8
Hassan.	•	10	0	10	0	11	0	11	0	12	0	23	0	23	0	16	0
Kadar.	•	12	10	12	10	11	0	11	0	12	0	24	0	24	0	14	0
Shimoga.	•	13	0	13	0	15	0	15	0	14	11	21	0	21	0	18	0
Coorg—																	
Coorg.	•	9	0	9	0	8	3	12	0	11	8	14	8	14	8	116	0
B. o. S. C.	•	8	0	8	0	6	3	6	3	8	0	8	0	8	0	59	5

Not only

E. J. SINKINSON

Off. Secretary to the Government of India.

GOVERNMENT OF INDIA.
PUBLIC WORKS DEPARTMENT.
CIVIL WORKS.

Irrigation.

REVENUE REPORT OF IRRIGATION WORKS IN SIND FOR 1887-88.

No. 122 I., dated Simla, the 28th June, 1889.

RESOLUTION—By the Government of India, Public Works Department.

Read—

Letter from the Government of Bombay, No. 56 W. I.—783, dated 29th April 1889, submitting the Revenue Report of the Irrigation Department in Sind for 1887-88, with a Memorandum by the Commissioner in Sind and the Resolution of the Government of Bombay on the subject.

The Irrigation system of Sind consists of a great network of canals led off from the Indus, watering a country which is almost rainless and devoid of wells, and which but for these canals would produce hardly any crops, except in basins flooded by the spill of the river. It also includes a system of embankments whose object it is to shut in the flood waters of the river and prevent its spill. But though these canals and embankments practically constitute one combined system, managed indiscriminately by the same engineering and collecting staff, they are distinguished for account purposes into four classes according to the nature of the funds employed in their construction. In the first class, Major Works, are four canals constructed from Loan Funds; in the second, Minor Works for which Capital and Revenue Accounts are kept, are seven canals constructed from Revenue. The rest of the canals fall into the third class, Minor Works for which only Revenue Accounts are kept, having for the most part been constructed from Revenue in earlier years before a careful system of Capital Accounts was started. The fourth class, Agricultural Works, consists chiefly of the embankments in Upper Sind, which are less closely connected with irrigation than with the protection of the country and the retention of the river in its proper course. Few of these canals are entirely new, though all have been greatly improved under British rule. In order to shew what credit is due to the capital expended on them, a calculation has been made of the earnings of the first two classes before improvement; and this sum is deducted from the figures which shew what the financial returns of those canals are. This amount has been fixed for the present at Rs. 4,03,007; but no similar allowance has been made on the other side for the former average cost of maintenance and collection.

2. The main features of the year under review were that the inundation of 1887 was a poor one. The river rose late and fell early; and, though it rose to a height at Bukkur which, with one exception, was the highest recorded, it only remained for one day at this height. The general results of the year were nevertheless very satisfactory on the whole. The area irrigated was larger by 56,464 acres than in the previous year; the collections were greater by Rs. 1,06,270. The assessments or gross earnings, including actual miscellaneous receipts, were greater by Rs. 1,26,032; but the expenditure increased, by Rs. 1,68,173. Thus the net earnings of the canals fell off by Rs. 42,141, or about 2 per cent. of the entire net earnings of the Canal system.

3. The Irrigation system was increased by three miles of canals and eight miles of embankments constructed in the Eastern Nara district during the year 1887-88. It consists now of 5,827 miles of canals and 610 miles of

embankments. Capital Accounts are kept of the works on which expenditure is shown in the following statement; they comprise in all 2,552 miles of canals and 236 miles of embankments:

	Number of Works.	DURING THE YEAR 1887-88.			TO END OF THE YEAR 1887-88.		
		Direct.	Indirect.	Total.	Direct.	Indirect.	Total.
MAJOR WORKS.							
Productive Public Works	4	1,87,226	6,615	1,93,841	80,84,617	2,76,461	83,11,078
MINOR WORKS.							
Works of which Capital and Revenue Accounts are kept.	7	...	...	...	30,75,900	1,85,284	32,11,184
TOTAL		11	1,87,226	6,615	1,93,841	1,11,10,517	4,11,745
							1,15,22,262

The Capital Expenditure was chiefly on the distributaries of the Desert and Eastern Nara Canals. The estimated cost of the four Productive Works is Rs. 83,11,078, including indirect charges, so a little over five lakhs remain for expenditure. The estimates of the Minor Works aggregate Rs. 32,98,676, of which only a sum of Rs. 87,492 is still unspent.

4. The following statement shows the actual collections and expenditure on the first two classes of Canals in the year 1887-88:

CANAL.	Capital Outlay to end of 1887-89.	GROSS REVENUE.				WORKING EXPENSES.				Net Revenue.	Balance or Net Revenue due to Capital Expenditure.	Percentage of Net Revenue on Capital Outlay.
		Irrigation. Government Land.	Jaghir Land.	Total.	Plantations and Miscellaneous Revenues.	Direct.	Indirect.	Total.	Rs.	Rs.	Rs.	Rs.
1	2	3	4	5	6	7	8	9	10	11	12	13
MAJOR WORKS.—												
Productive Works—												
Desert Canal	12,16,849	91,709	36,742	229	1,28,650	49,589	1,337	50,925	77,765	... 77,755	6,29	
Unbarab	8,26,915	53,206	10	30	58,946	16,680	341	17,201	36,015	... 36,045	10,68	
Begari Canal	16,72,079	2,40,004	25,026	465	2,88,095	83,066	1,925	85,021	1,81,074	24,886	1,66,218	9,84
Eastern Nira Canal	50,92,751	3,15,967	819	15,170	3,31,956	87,063	2,813	89,876	2,42,060	8,446	2,38,638	4,89
Total Productive Works	83,11,078	7,01,486	62,597	15,893	7,79,977	2,36,617	6,416	2,43,923	5,36,954	28,300	5,03,654	6,12
Minor Works.												
Works of which Capital and Revenue Accounts are kept.												
Sukkur Canal	13,58,713	1,69,443	479	652	1,70,574	43,571	809	44,460	1,26,094	71,550	64,534	893
Ghar Canal	4,40,977	4,59,614	819	3,836	4,61,269	1,20,721	3,419	1,64,140	3,00,129	1,16,839	1,88,297	41,66
Mehrabwah	67,869	23,181	...	202	23,383	9,188	198	9,386	13,897	...	18,987	20,62
Alibhar Kachheri Canal	23,917	12,536	635	15	13,186	5,967	169	6,125	7,061	8,427	—1,368	...
Merak Great Canal	2,01,553	81,723	1,805	308	83,926	18,183	375	18,559	65,367	38,459	28,908	14,84
Surfrazwah	1,24,680	30,906	1,540	348	32,794	11,988	281	12,174	20,620	11,155	9,465	759
Fuleli Canal	9,69,476	4,88,766	18,924	4,637	5,12,347	2,47,849	5,200	2,53,049	1,30,284	1,29,914	13,89	
Total Minor Works of which Capital and Revenue Accounts are kept.	32,11,184	12,66,189	24,292	6,093	13,01,479	4,97,372	10,641	6,07,913	7,92,565	8,74,707	4,17,850	13,03
Total	1,15,22,202	19,87,675	86,889	25,802	20,80,456	7,33,270	16,937	7,33,270	13,29,520	4,03,007	9,26,513	8,04
Total for 1886-87	1,13,28,421	18,43,767	1,11,386	28,019	19,88,196	6,58,129	18,145	6,76,274	13,05,921	4,03,007	9,03,914	7,97

Note.—These figures, which are compiled from Statements I B and I C, combined with Table VI A, differ from the Finance Accounts in the following respects.—The Capital Outlays in column 2 includes Indirect charges, which are not shown in the Finance Accounts. The Indirect charges in column 6, which are mainly a calculation of liability for leave and pension allowances, are not shown in the Finance Accounts. The figures in column 7 (Direct Working Expenses) do not agree with the Finances Accounts in that they include Collection charges in the Civil Department, which in the Finance Accounts are deducted from Indirect Revenue. Of the Receipts in column 8, which are shown in the Account under the head "Indirect Receipts," only that portion which pertains to Major Works after deducting Average Receipts before Improvements (column 11), is shown to the Finance Accounts.

The net revenue of the Major Works is Rs. 62,547 greater, and that of the Minor Works Rs. 39,948 less, than in the previous year, the aggregate return on capital being 8·04 as compared with 7·97 per cent.

5. The third class of canals, chiefly in the Hyderabad and Karachi districts, for which only Revenue Accounts are kept, comprise 3,275 miles of channels and 874 miles of embankments. These gave the following results in 1887-88:

	Gross Revenue.	Working Expenses.	Net Revenue.
	Direct	Indirect	
Direct	(a) 44,739	10,02,394	...
Indirect	17,21,973	...	...
TOTAL	18,16,712	10,02,394	8,14,318
1886-87	18,05,069	8,47,630	9,57,439

(a) Note.—This figure differs from that shown in the Finance Accounts (Rs. 44,979) by Rs. 240, due to an adjustment of that amount on account of an error in the preliminary Canal return received in the Examiner's Office by transfer from Works for which Capital and Revenue Accounts are not kept to Works for which Capital and Revenue Accounts are kept.

6. The fourth class, called Agricultural Works, cost Rs. 1,12,491 for extensions, maintenance, and establishment; and a revenue of Rs. 7,212 was realised.

7. Thus the actual gross revenue collected and working expenses incurred in 1887-88 on the Irrigation Works in Sind as compared with that for the preceding year were—

	Gross Revenue.		Working Expenses.	
	1887-88.	1886-87.	1887-88.	1886-87.
(1) Major Works .	7,79,977	7,10,178	2,43,028	2,35,771
(2) Minor Works of which Capital and Revenue Accounts are kept .	18,00,479	12,73,017	5,07,913	4,40,503
(3) Minor Works of which Revenue Accounts only are kept .	18,16,712	18,05,069	10,02,394	8,47,630
(4) Agricultural Works .	7,212	9,846	1,12,191	1,73,744
TOTAL	39,04,880	37,98,110	18,65,821	16,97,648

8. But the figures, which shew the amount paid by the canals into the Government Treasury during the year, do not fully express the gross earnings of the works from a commercial point of view. There is a further sum, known as the "difference of assessment in Jaghir lands," which has to be added. This sum is the difference between the assessment actually made on these lands and that which would be made were they not specially favoured at the expense of the canals on account of their tenure. The "difference of assessment on Jaghir lands" in 1887-88 was Rs. 4,00,830, divided thus:

	Rs.
Class (1)	70,750
Class (2)	1,73,386
Class (3)	1,50,894

If the Net Revenue (given in column 12 of the statement in paragraph 4) be increased by the amounts belonging to classes (1) and (2), it will be found that the Irrigation Works in Sind of which Capital Accounts are kept paid in 1887-88 more than ten per cent. on their Capital cost.

Indeed, it is doubtful whether the works might not fairly be credited with even higher profits; for the "working expenses" include the repairs of the embankments in Sind. And these, although they are, in many cases, essential for the protection of irrigated lands, also serve other useful purposes.

9. The major irrigation works in Sind, that is, the four Productive Public Works, shew, collectively, a net profit to the State up to the end of the year of Rs. 7,26,982; that is, the total net revenue up to the end of the year has exceeded the interest charges by that amount. This result is obtained by the profitable working on three out of the four systems; but one, the Eastern Nara Canal, has at present a deficit of Rs. 8,57,285. Commencing from 1887-88, a reduction in the deficit has been made; and there is every reason to expect that further reductions will annually occur.

10. The foregoing paragraphs refer to the revenue collected during the year.

In the following statement, which has been prepared from Tables III and VI and Form I-C., columns 2, 3, 8, and 9 show the assessments of the year on account of irrigation alone, omitting miscellaneous receipts from plantations, &c. In order to obtain the true rate at which the charge for water is assessed on the irrigated acre, columns 4 and 10 have been added, which shew the amount assessed on Jaghir land but remitted to the Jaghdars.

1887-88.

1886-87.

Water Share of Net Revenue.	Share Hakaba.	Difference on Jaghir Assessments.	Total.	Area irrigated.	Rate per acre.	Water Share of Net Revenue.	Hakaba.	Difference on Jaghir Assessments.	Total.	Area irrigated.	Rate per acre.											
MAJOR WORKS.																						
<i>Productive Public Works—</i>																						
Desert Canal	89,722	38,615	30,593	1,50,290	88,552	1.79	65,311	36,936	29,723	1,31,970	76,562											
Uniauwali	53,155	10	..	53,165	29,406	1.80	43,773	..	..	43,773	24,322									
Begari Canal	2,30,789	28,478	34,085	2,93,352	157,600	1.86	2,31,196	33,405	40,791	3,25,392	171,900											
Eastern Nara Canals	3,16,802	1,123	5,772	3,23,497	170,781	1.89	2,56,550	1,366	7,191	2,65,017	136,327											
Total Productive Public Works	6,89,403	68,226	70,750	8,28,414	446,339	1.85	6,16,830	71,707	77,615	7,66,152	409,171											
<i>Minor Works.</i>																						
<i>Works of which Capital and Revenue Accounts are kept—</i>																						
Sukkur Canal	168,122	834	4,471	1,73,427	72,391	2.39	1,61,967	719	3,767	67,371	2.46											
Ghar Canal	4,66,605	1,015	9,835	4,67,455	166,230	2.91	4,79,818	1,378	13,929	4,94,425	2.83											
Mehrabwali	23,181	..	431	23,612	12,890	1.83	21,110	..	..	21,110	11,858									
Alibhar Kacheri Canal	12,206	288	1,819	14,313	6,616	2.16	13,298	411	2,397	16,136	1.78											
Marak Great Canal	78,685	1,630	12,926	92,341	41,118	2.24	80,656	1,700	12,205	94,561	9.06											
Surfrazwah	28,987	1,471	9,089	39,547	23,415	1.68	28,595	1,487	7,953	38,938	2.25											
Futeli Canal	4,88,618	15,600	1,35,515	6,42,738	277,166	2.31	4,36,882	15,914	1,01,012	5,56,808	24,294											
Total Minor Works	12,56,401	23,838	1,73,186	14,53,428	539,525	2.42	12,22,329	24,639	1,40,563	13,87,531	2.19											
Miner Works of which Capital and Revenue Accounts are not kept	17,67,461	26,931	1,56,894	19,50,586	821,110	2.87	17,40,688	27,252	1,32,036	18,99,976	2.19											
TOTAL	37,13,933	1,18,295	4,00,880	42,32,458	1,867,274	2.36	35,79,817	1,23,598	3,50,214	40,53,659	2.24											

The Hakaba Assessments are taken from Form I-C. and Table D, page 4 of the report. It is uncertain whether the figures given under this head under Minor Works for which Capital and Revenue Accounts are not kept are quite accurate : they are nowhere separately given in the Report.

11. The areas irrigated in 1887-88 by the different classes of works are shewn in the following statement as compared with those of the three previous years:

	1887-88.			1886-87.	1885-86.	1884-85.
	Government Lands.	Jogbir Lands.	Total.			
			Acre.	Acre.	Acre.	Acre.
Productive Public Works .	373,895	72,414	446,389	409,171	402,004	392,385
Minor Works (of which Capital and Revenue Accounts are kept) .	520,391	73,431	599,825	582,121	541,070	592,448
Minor Works (of which Capital and Revenue Accounts are not kept) .	740,495	71,612	821,110	818,089	790,073	794,355
Agricultural Works .	8,840	...	8,840	5,269	5,872	3,984
TOTAL .	1,653,627	217,487	1,871,114	1,814,650	1,739,019	1,768,173

The area irrigated is greater than that of the previous year, which was the largest on record except that of 1878-79. The increase was distributed over the majority of the works, but was largest on the Eastern Nara Canals. There was a decrease in Irrigation on the Begari and Ghar Canals and on some few of the other works. The decrease on the Begari Canal was due to the defective supply in June, caused partly by the low inundation of the year, and partly by the defective supply in a channel called the Waddu Dhand.

12. The following statement shows the working expenses, including indirect charges, of the year under review, compared with the corresponding figures of the previous three years :

	Working Expenses.	Rate per acre irrigated.	Working Expenses.		
			1887-88.	1886-87.	1885-86.
MAJOR WORKS—CLASS (1).					
Productive Public Works .	Rs.	Rs.	Rs.	Rs.	Rs.
Desert Canal .	50,925	0·57	48,915	39,932	44,642
Unherwah .	17,201	0·58	15,935	9,870	...
Begari Canal .	55,021	0·53	76,983	78,961	89,054
Eastern Nara Canals .	89,876	0·52	84,238	90,228	88,904
TOTAL PRODUCTIVE PUBLIC WORKS .	2,43,023	0·54	2,35,771	2,18,952	2,18,600

	Working Expenses. 1887-88.	Rate per acre irrigated.	Working Expenses.		
			1886-87.	1885-86.	1884-85.
	Rs.	Rs.	Rs.	Rs.	Rs.
MINOR WORKS—CLASS (2) <i>of which Capital and Revenue Accounts are kept.</i>					
Sukkar Canal	44,480	0.61	30,444	41,416	32,791
Ghar Canal	1,64,140	0.98	1,60,501	1,98,721	1,88,386
Mehrabwah	9,386	0.72	15,420	9,562	17,581
Alibhor Kachheri Canal	6,125	0.93	5,980	7,938	8,822
Marak Great Canal	18,550	0.45	16,207	16,477	19,548
Surfrazwah	12,174	0.51	16,990	11,466	19,334
Fuleli Canal	2,53,049	0.91	1,86,915	1,95,600	2,12,186
Total Minor Works of which Capital and Revenue Accounts are kept	5,07,013	0.84	4,40,503	4,81,180	4,91,642
Grand Total Works of which Capital and Revenue Accounts are kept	7,50,936	0.71	6,7,274	7,00,132	7,08,302
Rate per acre irrigated	...	0.71	0.68	0.71	0.71
(CLASS 3.)					
Minor Works of which only Revenue Accounts are kept	10,02,394	1.22	8,47,630	8,13,623	8,37,165
Rate per acre irrigated	...	1.22	1.04	1.02	1.05

Indirect charges are not shown in the case of Works of the third class.

The average rate per acre of working expenses on all the three classes of canals has been—

	1887-88.	1886-87.	1885-86.	1884-85.
Area	1,867,274	1,809,381	1,734,047	1,779,180
Amount	1,753,330	1,523,904	1,518,755	1,645,467
Rate per acre of working expenses.	0.93	0.84	0.87	0.86

For the Agricultural works the figures are—

Working Expenses	Working Expenses. 1887-88.	Working Expenses.			
		1886-87.	1885-86.	1884-85.	
		Rs.	Rs.	Rs.	Rs.
Working Expenses	1,12,491	1,79,744	63,298	65,935	

13. It will be noticed that the working expenses of all the three classes of canals have increased in the year under review. This increase is explained generally by the Superintending Engineer (paragraph 13, page 7) in the following words :

"The excess expenditure was rendered necessary by the short amount of grants in previous years and the consequent decay of the canals. However, it is a matter of congratulation that the expenditure well paid for itself, and there is no doubt that a much larger expenditure on canals in Sind would be much more than covered."

The Government of Bombay does not admit the accuracy of this statement. The matter is ably dealt with in paragraphs 14 to 18 inclusive of the Resolution of that Government. It is shewn that the allusion to the decay of the canals

is refuted by evidence in the report itself, and the following extract gives the opinion of the Government of Bombay:

"Government concur in the advantage financially of a liberal expenditure on canals in Sind; but the question as to the specific direction in which outlay may be made most productive is one requiring very careful consideration. As regards clearances, it is observed that the revenue is dependent principally on the character of the inundation and not on actual bed clearances; and it is apparent that money spent in any one season on extraordinary bed clearances of the canals running much below the level of the country might be almost, if not entirely, wasted, if the following inundation was a favourable one. This is exemplified by the reports, which shew that in 1880-81, after a good inundation and comparatively small expenditure, there were no complaints; whereas in 1887-88, after a poor inundation and large expenditure, there are demands for increased outlay. The outlay beyond a certain point is, in fact, only an insurance against an unfavourable inundation level; and it is a question if better average results would not be obtained by improvements in alignment, width, &c., rather than by extra clearance outlay, except perhaps on the tails of some of the canals, e.g., the Fuleli, which require thorough clearances, as well as improvements."

The Government of India concurs generally in this opinion. With regard to the conclusion that, provided financial requirements admit, an average of nine lakhs of rupees should be annually devoted to the maintenance and repairs of these canals, the reply of the Bombay Government is awaited to the call for information on the subject of the cost of clearances in Sind which was made in the course of 1888. On the 30th October 1888 the Government of Bombay reported that that information was ready and would be forwarded at once; but it has not yet been received.

14. The details of the working expenses of works of Classes 1 and 2 for which Capital and Revenue Accounts are kept are as follows:

	1887-88. Rs.	1886-87. Rs.
Extensions and Improvements	17,552	25,036
Maintenance and Repairs	4,34,100	3,52,520
Establishment	2,81,556	2,78,219
Tools and Plant	681	2,354
Indirect Charges	16,057	18,145
TOTAL	7,50,930	6,76,274

The charge for Establishment is made up of the following items:

	1887-88. Rs.	1886-87. Rs.
Share of Direction and Accounts	31,940	34,855
Executive Officers	89,189	94,770
Establishment under Civil Officers	1,60,421	1,48,584
	2,81,556	2,78,219

The Establishment charges are distributed in the same manner as those in the Bombay Presidency (*vide* paragraph 9 of Government of India Resolution No. 30-I. of 22nd February 1889). The establishment under Civil Officers is a share of the cost of Civil Establishments employed in collecting revenue, and is calculated at 10 per cent. on the actual revenue collected in that department.

15. The Commissioner in Sind, in paragraphs 38 to 40 of his memorandum No. 390 of 31st January 1889, refers to the expenditure on Working Expenses. He points out that the establishment charged to "Works and Repairs" is more costly than the regular establishment, which is accounted for under its proper head. The comparison made by the Commissioner is not quite an accurate one, as he omits to notice that a considerable proportion of the charge for permanent establishment is properly chargeable to "Revenue management" and not to "Maintenance." However, there can be no doubt that the charges for "work establishment" are most abnormally large, being, for the works for which Capital Accounts are kept, apparently more than half the total charges to "Works." This matter appears to call for the early attention of the Government of Bombay.

16. The remissions of Revenue on Government lands were Rs. 61,937, or less than half those of the previous year, and considerably below the average of former years. The unrealized balance on account of Government lands were considerably decreased during the year. The amount outstanding for 1886-87 was 92,055; that for 1887-88, only Rs. 42,597. The unrealized balance for Jaglir lands, however, increased from Rs. 90,289 to Rs. 94,813. In this case the largest arrears are in Khojat: the question of the assessments and collections in this territory is now under the consideration of the Government of India.

17. The report is accompanied by a memorandum by the Commissioner in Sind, which contains some important suggestions concerning the following points:

- (1) The necessity of early clearances and early openings of the canals.
- (2) The danger of canalising the Indus.
- (3) The injury done by keeping out spill water, which used to fertilise the land. If this is set against the advantages of the canals, the result is a less and not a greater cultivated area.
- (4) Absorption of water by landholders living near the heads of the canals.
- (5) Payment for the use of surplus water let out over grazing lands.
- (6) Fuller information as to cultivation and crop areas on each canal, and as to expenditure on maintenance.

The Government of Bombay has decided to refer the suggestions of the Commissioner for the opinion and remarks of the Superintending Engineer and the Examiner of Public Works Accounts. The Government of India will be glad to learn the result of these references.

18. The Government of India has under separate consideration the question of the very late date on which the Revenue Report of Irrigation operations in Sind is invariably submitted. It is noticed that in the forwarding letter the Government of Bombay again mentions the time taken in printing as one of the chief causes of delay. This reason is not one to which much weight should be attached, as the amount of printing is trifling.

ORDER.—Ordered, that a copy of this Resolution be forwarded to the Government of Bombay in the Public Works Department for information.

Ordered also, that a copy of this Resolution, of the Report, and of the Madras; Bengal; the North-Western Provinces; Oudh; and the Punjab. Resolution by the Government of Bombay, be forwarded for information to the Governments noted in the margin in the Public Works Department; and that a copy of this Resolution, of the Report, and of the Resolution by the Government of Bombay, be forwarded to the Department of Finance and Commerce, and to the Revenue and Agricultural Department, for information.

Ordered further, that a copy of this Resolution, the Resolution by the Local Government, and the Memorandum by the Commissioner in Sind, together with the General Abstract of Financial Results, be published in the Supplement to the *Gazette of India*; and that copies of this Resolution be forwarded to Her Majesty's Secretary of State for India.

Enclosure to Public Works Department Resolution No. 122-I. of 1889.

RESOLUTION—*By the Government of Bombay, Public Works Department.*

No. 66 W. I.—788, dated 29th April 1889.

Read—

Letter from the Superintending Engineer for Irrigation in Sind, No. 3861, dated 20th December 1888.—Submits the Revenue Report of Irrigation Works in Sind for 1887-88, with the usual tables, charts and index map of Sind, and also a comparative statement showing a series of readings of the gauges at Bakkur and Kotri.

Memorandum from the Commissioner in Sind, No. 390, dated 31st January 1889.—Forwards the above with remarks.

Letter from the Superintending Engineer for Irrigation in Sind, No. 540, dated 11th February 1889.—Forwards an explanation of certain mistakes noticed by the Commissioner in Sind in the Tables attached to the Revenue Report for 1887-88. Submits fresh copies of Tables IV and VI A, which are now correct.

Telegram from the Superintending Engineer in Sind, dated 4th April 1889 :—“Discrepancy. Government Resolution 812, due to write off. Alter column 2, gross revenue to Rs. 34,04,180 and collection charges to Rs. 3,42,170.”

Telegram from the Superintending Engineer in Sind, dated 4th April 1889 :—“Please adopt Examiner’s figures of Revenue Account.”

Telegram from the Superintending Engineer in Sind, dated 4th April 1889.

Telegram from the Superintending Engineer in Sind, dated 6th April 1889.

RESOLUTION.—The inundation of 1887 is characterised by the Superintending Engineer as a very poor one: the river rose late and fell early, and, though the maximum height at Bakkur was the highest on record, except that of 1882, it only remained at that height for one day—a most unusual incident. The Commissioner in Sind describes it as somewhat irregular and deficient, but says the season was on the whole favourable, as the rainfall was reasonable and the prices of produce ruled unusually high.

2. The mileage of canals and river embankments was 5,827 and 610 miles respectively, or practically the same as in the previous year.

3. The agricultural operations and financial results of the year are the best on record. The area of cultivation on the canals was 1,871,114 acres, including 217,487 acres of jaghir; the irrigation share of net consolidated assessment was Rs. 37,20,291, and the total canal revenue (assessed) was Rs. 38,82,426, as follows :

Treated in the Accounts as Indirect Revenue.

	Rs.
Consolidated land and water assessments	41,05,588
<i>Deduct</i> —Remissions	61,937
Net consolidated assessments	41,03,651
<i>Deduct</i> —Land share	4,13,360
Irrigation or water share of net consolidated assessments	37,20,291

Revenue accounted for as Direct Receipts.

	Rs.
Assessments on jaghir cultivation	1,18,285
<i>Deduct</i> —Remissions	1,450
Miscellaneous Receipts (actuals)	1,16,845
	45,290
	<u><u>38,82,426</u></u>

4. The expenditure on maintenance and repairs was Rs. 18,02,617 and that on extensions and improvements Rs. 2,04,098. The charge debited to the canals for share of collection charges incurred in the Revenue Department was Rs. 3,42,170. The total charges were thus Rs. 18,48,883. This is exclusive of a charge of Rs. 16,937 under Indirect charges (Leave and Pension Allowances) included in the Examiner’s statement showing the Financial Results of the works for which Capital Accounts are kept.

The outlay incurred on Capital Account during the year amounted to Rs. 1,93,841. To this there is no allusion anywhere in the report. It was incurred wholly on the four works classed as Major Works.

5. Comparing the results of the year with those of the previous year (one of 'very good' 1886-87, 1887-88, Difference, inundation), there was an increase in the area of Government 1,598,660 1,653,627 +59,961 cultivation of 53,464* acres. Of the increase on Jaghir 222,981 217,497 -3,497 the Government lands, 20,523 acres was in the rabi area. The irrigation share of net consolidated assessments shows an increase of Rs. 1,30,792, of which Rs. 55,806 was in the rabi assessments.

The total canal revenue (assessed) shows an increase of Rs. 1,45,814, as follows:

	Rs.
Increase in net consolidated assessments	1,30,792
Increase in net assessment on-jaghir cultivation	18,188
	<hr/>
	1,48,981
Deduct—Decrease in miscellaneous receipts	3,107
	<hr/>
Net increase	1,45,814

The increase in jaghir assessment is due to a large reduction in the remissions, which, in 1886-87, were Rs. 21,942,† as compared with Rs. 170 were on account of the previous year.

The decrease in miscellaneous receipts is explained by the Commissioner as principally due to decreased receipts from fisheries.

6. The expenditure of the year again shows a large increase, amounting to Rs. 1,69,375, as follows:

	OUTLAY.		Increase.	Decrease.
	1886-87.	1887-88.		
Extenssions and Improvements	2,00,615	1,67,420	...	33,195
Maintenance and Repairs	8,27,922	10,41,601	2,13,679	...
Public Works Establishment	8,21,577	8,07,782	...	23,785
Total in Public Works Department	13,50,114	15,06,713	1,56,599	...
Revenue (collection charges)	3,29,394	3,42,170	12,776	...
TOTAL	16,79,508	18,48,883	1,69,375	...

No description is given of the works carried out from expenditure classed as extensions and improvements. This omission should be supplied in future reports. The expenditure on maintenance and repairs was largely in excess of that in the previous year, or in any previous year, and almost the whole of the increase was spent on the canals themselves and not on the river embankments.

It is argued from the smallness of the remissions of Government revenue (less than half those of the average of the previous six years and only 1.5 per cent. on the assessed revenue) that the canals were in excellent order, and had this not been so, the admirable results shown for the year's cultivation and revenue would not have been realised owing to the poor inundation. From the figures given relating to cultivation on the Ghar (see paragraph 21 of this Resolution) the decrease in remissions would appear to be largely due to the flexibility of the irrigational settlement.

The charge for Public Works Establishment shows a reduction of Rs. 23,785. Including the sums debitable to Capital, the Establishment charges were—

	1886-87.	1887-88.
	Rs.	Rs.
Capital Revenue	41,379	47,252
	8,21,577	8,07,782
	<hr/>	<hr/>
	3,62,056	3,45,044

showing a net reduction of Rs. 17,912.

7. The net canal revenue (assessed) during the year was Rs. 20,33,543, as compared with Rs. 20,57,104 in 1886-87, showing a decrease of Rs. 23,561, or only 1 per cent., in spite of the heavy charges incurred. In both cases the charges for river embankments are treated as debits to revenue, though those for the bunds in Upper Sind are accounted for under Agricultural Works for which no Capital or Revenue Accounts are kept.

8. There were, it is reported, no very sweeping changes in the course of the river during 1887, but in the delta, where the river bifurcates, extensive erosion took place, and further changes seem likely.

9. The suggestion made in paragraph 24 of last year's review, in regard to distinguishing between figures showing assessments and realizations, has been followed in the tables accompanying the report, but not in those given in the body of the report. Tables A and B in paragraphs 5 and 6 both show assessments, but in the latter and again in paragraph 7 the expression "consolidated revenue" is used where "consolidated assessments" are referred to. The Table C in the latter paragraph and Table D (a) in paragraph 10 include the irrigation share of the net consolidated assessments and actual receipts under Hakaba—an inconvenient combination: in respect of miscellaneous receipts included in Table C, it may not be feasible to give the assessments. There is a small discrepancy in the total shown as actual realizations in Table D, as compared with the corresponding figures in Tables D (a) and II and III.

10. The question of the irrigation in Khelat Territory is under reference to the Government of India, and it is hoped that arrangements may be made for the systematic assessment of the lands irrigated beyond the Frontier, and for the control of remissions and the punctual realization of the revenue. It is observed that the water supply was reported as good, and that, on the basis of partial measurements, a large increase in cultivation in Khelat Territory was at one time anticipated, but the returns show a decrease. In the Finance Accounts of the year, the Examiner explains the delay in realizing the revenue in Khelat Territory as due to the removal of the Naib and his establishment by His Highness the Khan of Khelat. This is not alluded to by the Superintending Engineer.

11. The sum shown as less to the canals by the difference between the Hakaba levied on jagbir cultivation and the assessment thereon calculated at the ordinary rates in force for Government lands, is Rs. 4,00,880, as compared with Rs. 3,80,214 in the previous year. A large proportion of this loss is on the canals in the Hyderabad District. The Commissioner observes that in some instances additional contributions in the shape of enhanced Hakaba may be possible, and the subject is engaging his attention.

12. The Table E gives a comparison between assessments and realizations of the consolidated land and water revenue (not the total revenue as stated). The total for collection should apparently be—

	Rs.
Outstandings	92,055
Net assessments of the year	41,33,651
	<hr/> 42,25,706

Instead of Rs. 42,05,183. A similar discrepancy was remarked upon last year, and it was subsequently explained as due to deductions of remissions on account of previous years. Instructions were given that explanation regarding such discrepancies should be given in future reports, but this has not been attended to. The form of Table E should be modified to afford the information in future.

13. The remissions of the year amounted to Rs. 61,987, or Rs. 74,492 less than the previous year, and with the exception of 1881-82 were considerably lower than in any of the previous six years. This, as observed by the Commissioner, is very satisfactory: the inference drawn therefrom as regards the state of the canals and the effect of the irrigation settlement, has already been commented upon.

14. The statement made in paragraph 13 of the Superintending Engineer's report that the excess expenditure incurred in 1887-88 was rendered necessary by the short amount of grants in previous years and the consequent decay of the canals, requires some explanation. The subject was reviewed at some length in a Resolution of this Government of 25th January

* No. 10 W. L.—1884 A. of 1888.

1888,* which showed that ever since 1881-82 inclusive, the estimate of the requirements put forward

by the Irrigation Officers in Sind had been accepted by this Government, and not only so, but that the grants actually allotted were considerably in excess of those estimates. The expenditure in 1886-87 was—

	Rs.
Major Works	1,20,178
Minor Works	7,07,744
	<hr/> 8,27,922

as compared with—

	Rs.
Major Works	1,52,000
Minor Works	6,64,000
	<hr/> 8,10,000

the estimate of requirements framed by the Superintending Engineer in 1884. It should be noted that as regards Major Works there never has been any difficulty or restriction on

allotments, and the fact that the outlay was less than the estimate must be understood as implying that the canals of that class did not require a larger expenditure for their maintenance. It will be observed that the outlay on canals classed as Minor Works was in 1886-87 Rs. 43,744 in excess of the estimates of 1884. That this was sufficient may further be judged from the fact that no complaints as to the insufficiency of the clearance grants or as to the state of the canals were made in the Report for 1886-87. The inundation of 1886 was a very good one, and the Commissioner reported the results of the year "in all divisions were satisfactory so far as they could be controlled by the department." From the date of the enquiry ordered by the Secretary of State, or from 1881-82 to 1886-87 inclusive, therefore no complaint can hold good which would attribute any shortcomings in the state of the canals to short amount of grants in previous years, unless it is intended to imply that the estimates of requirements put forward by the then responsible officers were insufficient and that those officers were ignorant of the state in which the canals were, as the result of the expenditure which even exceeded those estimates.

As regards the year 1887-88 the Original Budget grant was—

	Rs.
Major Works	1,24,000
Minor Works	7,16,000
	<hr/> 8,40,000

or, as regards Minor Works, still considerably in excess of the estimate of requirements framed in 1884. In January 1887, before the issue of the Budget for 1887-88, the Superintending Engineer in Sind represented that this grant would be insufficient, and referring to a report he had written in February 1886 on the financial question of provincializing the works in Sind then under consideration, urged that the grant for repairs in 1887-88 should be increased to the amount therein estimated as the basis for such an arrangement, namely 9 lakhs. He further then reported that he had been sanctioning clearance estimates on the supposition that under the new Provincial contract the full amount of 9 lakhs would be granted for 1887-88. In other words, he had in 1886-87 been forestalling the grant for 1887-88 and in consequence in October 1887 his successor represented that only Rs. 1,34,429 were then in hand for the entire Province to commence work with and carry on up to 31st March 1888. He represented a further grant as absolutely necessary partly on these grounds and partly on the grounds that owing to the numerous rises and falls of the river during the previous season (1887) the canals were more silted than usual. A large additional grant was sanctioned on this representation, but it is evident from the foregoing explanation that it was necessitated partly to put a stop to the system of forestalling grants and partly by reason of special conditions resulting from the character of the inundation of the year 1887.

15. Further the allusion to the decay of the canals is refuted by evidence in the report itself, which shows that the canals were in excellent working order, and that, had this not been so, the revenue would have been affected by the poor inundation, and not have increased in the satisfactory way it is shown to have done. Moreover, if there was any such decay, it was the duty of the Superintending Engineer to have reported it at once. This was not done, neither is there any allusion to the matter, important as it is, in any of the previous Revenue Reports, and Government must regard the expression as one entirely unsupported by any evidence.

16. Government concur in the advantage financially of a liberal expenditure on canals in Sind, but the question as to the specific direction in which outlay may be made most productive is one requiring very careful consideration. As regards clearances it is observed that the revenue is dependent principally on the character of the inundation and not on actual bed clearances, and it is apparent that money spent in any one season on extraordinary bed clearances of the canals running much below the level of the country might be almost, if not entirely, wasted, if the following inundation was a favourable one. This is exemplified by the reports which show that in 1886-87, after a good inundation and comparatively small expenditure, there were no complaints, whereas in 1887-88, after a poor inundation and large expenditure there are demands for increased outlay. The outlay beyond a certain point is, in fact, only an insurance against an unfavorable inundation level, and it is a question if better average results would not be obtained by improvements in alignment, width, &c., rather than by extra clearance outlay, except perhaps on the tails of some of the canals, e.g., the Fuleli, which require thorough clearance as well as improvements.

17. The Commissioner, in paragraph 8 of his report, alludes to 9 lakhs of rupees a year, which he, the late Commissioner, and late Superintending Engineer, as well as the present Superintending Engineer, agree in considering essential for the ordinary clearance and maintenance of Sind canals. This is the estimate of February 1886, above referred to, and the amount is comprised as follows:

	Rs.
Major Works	1,31,000
Minor Works—	
Canals	6,46,000
Bunds	1,23,000
	<hr/> 7,69,000
	<hr/> 9,00,000

Transfers from the head Major Works to Minor Works are not allowable, and the foregoing statement is in excess of the actual demands under the head Major Works, as submitted in the Superintending Engineer's Budget for the last two years, which demands have been complied with in full:

The grant for 1888-89 was—

	Rs.
Major Works	1,24,000
Minor Works	<u>7,99,000</u>
	<u>9,23,000</u>

That for 1889-90 is—

	Rs.
Major Works	1,24,000
Minor Works	<u>7,88,000</u>
	<u>8,93,000</u>

The latter figures were communicated to the Superintending Engineer on 19th January last, the earliest possible date.

18. Government are not prepared to admit that the possible fluctuations in Budget grants under this head are such as to interfere with the preparation of a well-considered programme for the season's operations, but if it will in any way aid to such an end, it may be assumed that the grant will, as recommended, not be less in the ensuing five years than rupees 9 lakhs, of which Rs. 1,81,000 is for Major Works, the actual grant under that head being fixed according to the detailed Budgets.

19. The question of adjusting a portion of the cost of the maintenance of the river embankments in Upper Sind to the debit of the Railway is an accounts one. It is undoubtedly incorrect that the whole amount should be treated as a charge against the canal revenue, but in fact this is done in determining the net canal revenue of the Province for comparative purposes only. The outlay on the Kashmor and Kasimpur bunds in Upper Sind is accounted for under the head Agricultural Works for which no Capital or Revenue Accounts are kept. On the other hand, it is wrong that special repairs to protective embankments should, when required, be executed at the expense of the canals. This, however, is a matter which rests entirely with the Superintending Engineer, who, if special grants for embankments not solely for the protection of canal revenue are required, should represent it, and not sanction them by re-appropriation from the grants for canals. Such re-appropriations involve a transfer from Revenue Account Works to Agricultural Works, and it will perhaps be advisable to make a rule prohibiting such transfers without the previous sanction of Government. The question is moreover not of the importance that might be supposed from the figures given in Table G (a), as, for instance, out of the total of Rs. 1,82,743, shown as expenditure on repairs to bunds in 1887-88, Rs. 89,585 was on embankments in Lower Sind, purely for the protection of canal revenue, and therefore presumably just as essential as canal clearances.

20. The financial result of the four Major Works for the year are as follows:—

	DURING THE YEAR.			TO END OF THE YEAR.		
	Direct.		Indirect.	Direct.		Indirect.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Major Works— Capital Outlay	1,87,226	6,615	1,93,841	80,34,617	2,76,481	83,11,078
Gross Revenue	78,491	6,79,180	7,51,677	9,51,747	92,86,001	1,02,38,348
Working Expenses	2,80,607	6,416	2,43,023	45,99,982	1,66,168	47,66,150
Net Revenue		5,08,654			54,72,198	
Simple Interest		3,17,639			47,45,216	
Net profit after paying Inter- est		1,91,015			7,26,982	

In the previous year the net profit was Rs. 1,36,908, and the figures thus show an improvement of Rs. 54,107, or nearly 40 per cent. All the works show an increase except the Begari Canal, which suffered from a deficiency in the supply in the Dhand (side channel or back water) from which it is fed; its working expenses too were heavier than in the previous year. The increase was largest on the Eastern Nara Works, which show satisfactory progress.

The comparison with figures of the previous year is as follows:—

	1886-87.	1887-88.
	Rs.	Rs.
Gross Revenue	6,81,883	7,51,677
Working Expenses	2,35,776	2,43,023
Net Revenue	4,46,107	5,08,654

21. The Minor Works for which Capital and Revenue Accounts are kept show the following results, as compared with the previous year:

	1886-87. Rs.	1887-88. Rs.
Capital Outlay	<u>32,11,184</u>	<u>32,11,884</u>
Gross Revenue	8,98,310	9,25,791
Working Expenses	4,40,603*	5,07,932†
Net revenue	<u>4,57,807</u>	<u>4,17,859</u>

* Includes Rs. 11,385 for indirect charges.
† Includes Rs. 10,511 for indirect charges.

The increase in Gross Revenue was principally on the Fuleli and Sukkur Canals : on the Ghar, on the other hand, there was again a large falling off, due to the lower assessment on jowari crops, which, owing to the deficient inundation, extensively replaced rice. The area of the latter crop fell from 128,889 acres in 1886-87 to 44,539 acres in 1887-88, while that of the former increased from 28,230 to 81,089 acres. The increase in Working Expenses was principally on the Sukkur Canal and Fuleli : on the former Rs. 14,036, and on the latter Rs. 66,134.

22. The class "Works for which only Revenue Accounts are kept" gave the following results :

	1886-87. Rs.	1887-88. Rs.
Gross Revenue	18,05,069	18,16,712
Working Expenses	8,47,630	10,02,394
Net Revenue	<u>9,57,439</u>	<u>8,14,318</u>

23. Under the head "Agricultural Works for which neither Capital nor Revenue Accounts are kept," which includes the Kashmor and Kassimpur Bunds in Upper Sind, the figures of the year compare with those of the previous year as follows:

Outlay—	1886-87. Rs.	1887-88. Rs.
Original Works	1,07,655	52,035
Repairs	37,334	40,165
Establishment and Tools and Plant	27,790	19,695
Collection charges	905	696
TOTAL	<u>1,73,744</u>	<u>1,12,491</u>
Receipts—		
Direct	194	254
Indirect	9,652	6,053
	<u>9,846</u>	<u>7,212</u>

The decrease in expenditure is on the Loop Bund near Kashmor. The decrease in revenue is not explained, but is probably due to the deficient inundation.

24. Recapitulating the results of the year under all heads, they were as follows:

	Gross Revenue.	Working Expenses.	Net Revenue.
	Rs.	Rs.	Rs.
Major Works	7,51,877	2,43,023	5,08,654
Minor Works—			
Works for which Capital and Revenue Accounts are kept	9,25,791	5,07,932	4,17,859
Works for which only Revenue Accounts are kept	18,16,712	10,02,394	8,14,318
Agricultural Works	34,94,180	17,53,349	17,40,831
	7,212	1,12,491	—1,05,279
	<u>95,01,892</u>	<u>18,65,840</u>	<u>16,35,652</u>

The figures under Gross Revenue exclude the average net revenue before improvement on the Works for which Capital and Revenue Accounts are kept. The deduction on this account was Rs. 4,08,007, and with this addition the total is Rs. 39,04,899, as follows :

	Rs.
Irrigation share of collections of year, Table E.	37,16,333
Hakuhu, Table III	1,12,503
Miscellaneous Receipts, Table III.	45,290
	<hr/>
	39,04,126
	<hr/>

This discrepancy of Rs. 273 is not explained.

Again under Working Expenses, the figures differ from those in previous portions of the report by reason of the inclusion here of Rs. 16,957 for indirect charges (Leave and Pension Allowances). The following is an analysis of the total expenditure other than Capital during the year :

		MINOR WORKS.			Total
		Major Works,	Works for which Capital and Revenue Accounts are kept.	Works for which only Revenue Accounts are kept.	
<i>Extensions and Improvements.</i>		Rs.	Rs.	Rs.	Rs.
Works	{ Canals	...	17,552	4,697	1,454
	{ Bunds	...	...	99,136	50,581
Establishment and Tools and Plant		...	4,228	21,729	10,721
	Total	...	21,778	1,19,562	62,756
					2,04,096
<i>Maintenance and Repairs.</i>					
Repairs	{ Canals	1,21,620	3,12,670	4,23,941	808
	{ Bunds	...	...	1,43,180	39,557
Public Works Establishment and Tools and Plant		46,930	71,280	1,34,052	8,874
Refunds of Revenue		...	19	...	...
	Total Maintenance and Repairs	1,67,950	3,83,849	7,01,779	69,039
					13,02,617
Total in Public Works Department		1,67,950	4,06,627	8,21,341	1,11,705
Civil Establishment (collection charges)		68,657	91,764	1,81,058	696
Indirect charges		6,416	10,541	...	...
	GRAND TOTAL	2,43,023	6,07,932	10,02,394	1,12,491
					18,65,840

25. The duty of the water per cubic foot per second shown in Table VIII. shows an improvement in every case as compared with the previous year, except on the Begari and Fuleli Canals and the Imamwah. In the case of the Fuleli the figures show an increase in the area of rice cultivation from 147,282 to 160,694 acres, but this may be due to the change of system in gauging this canal, referred to in paragraph 20 of the Superintending Engineer's report. It is explained that under the former system the discharge used off the old Fuleli head was omitted, and presumably the area cultivated thereon also: now both are included. The normal rates of duty, namely 50 acres per cubic foot per second for a dry crop canal and 30 acres per cubic foot per second for a wet crop canal, seem fair for the purposes of estimating the financial prospects of future proposals for new canals. The former figure is perhaps high and the latter somewhat low.

26. This review deals with the main features of the year's operations and incidentally with the question of the clearance grant, which the remarks in the report appeared to call for.

The memorandum by the Commissioner in Sind refers to several matters affecting canal administration generally, and will be carefully enquired into and dealt with separately. With this in view the recommendation and suggestions should in the first instance be referred for the opinion and remarks of the Superintending Engineer in Sind and Examiner of Public Works Accounts.

27. Government concur with the Commissioner in Sind in the opinion that the report should in future comprise a more complete account of the operations of the year under all heads. The matter is of such importance that the fullest details should be available for criticism and as a record for future comparison. It is also imperative that there should be no discrepancies in the figures, or where such are unavoidable they should be fully explained.

28. Government are pleased to observe that the Commissioner bears testimony to the excellent work done by Mr. Lambert, the Superintending Engineer, and the officers of the Department during the year, and are further glad to notice the encomium passed on Messrs. Coghlan, Young, and Single for the condition and management of the canals in their respective districts.

29. Copies of the report and of this review should be forwarded to the Government of India and Secretary of State for India, as usual.

R. HOME, Colonel, R.E.,
Deputy Secy. to the Govt. of India.

No. 399 or 1889.

PUBLIC WORKS DEPARTMENT.

Commissioner's Office, Camp Tharwah, 31st January 1889.

* Superintending Engineer's letter No. 3861, dated the 20th December 1888, forwarding Sind Irrigation Revenue Report for 1887-88. * Submitted to Government.

2. The Superintending Engineer's report submitted on the 20th December 1888, reached the Commissioner on the 1st January 1889. The date of submission is fifteen days earlier than in the previous year. Last year's report was delayed because discrepancies discovered in Canal Returns VIII and VIII-A had to be rectified, and also because the preparation of the report was new to Mr. Lambert, who had besides very heavy current work which took up most of his time. This year the delay is attributed to the non-receipt from the Examiner of—the General Revenue Accounts, the General Abstract of Financial results and other statements, and also to "the pressure of other work" in Mr. Lambert's office. The returns from the Examiner did not reach Mr. Lambert until the 7th December and the report was not taken in hand until the 12th. The actual preparation of the report thus appears to have taken only seven or eight days, so that the responsibility for the delay, which has been the subject of telegraphic communication from Government, would appear to rest with the Examiner of Public Works Accounts.

3. The season was on the whole favorable. The inundation was somewhat irregular and deficient, but the rainfall was seasonable and the prices of produce ruled unusually high. The rain that fell in the kharif season saved crops that would have suffered from the low inundation, and throughout the rabi season heavy showers were frequent all over the province and brought to maturity a bumper rabi crop. The remissions asked for and granted were below the average of recent years, the deficiency in outturn in some localities having been counterbalanced by the high prices obtained for grain and seeds. The areas (kharif and rabi) cultivated, the realizations on account of Canal Revenue, and the remissions granted in each Canal Division during the year under report are contrasted with those of the preceding year in the following table:

The principal extensions of kharif cultivation occurred on the Eastern Nara and Fuleli Canals. That on the Eastern Nara Canals is in keeping with the steady growth of cultivation observed there for some years past, and that on the Fuleli is due to the clearance of one of the tails in the Budin Taluka that restored to cultivation lands that had been swamped for some years. The increase on these canals amounts to about 40,000 acres, and that on all other canals, except on those in the Ghar Division where the extent of kharif cultivation was less by about 22,000 acres than in 1886-87, aggregates 12,843 acres. The decline of cultivation in the Ghar Division, which has been progressive for several years, is due to the vagaries of the river in the neighbourhood of the two mouths of the Ghar Canal. The chief increase of rabi cultivation (21,538 acres) occurred in the Ghar Division and is made up as follows:

	Acres.
Sukkur Canal	6,258
Ghar Canal	7,668
Western Nara	8,113
Wahar Canal	583
Bands	14
Total	21,536

Of these canals the Sukkur Canal is the only one that carries a Rabi supply. Rabi cultivation on the other canals abovementioned and on most other canals in Sind is from waterings obtained during the kharif season aided by showers that almost always fall in the cold weather and by well irrigation. Well cultivation has been greatly extended in recent years, especially in the Hyderabad and Shikarpur Districts.

4. The river began to rise on the 12th May and reached on the 15th a height of 8' 7"; fluctuating slightly between the 15th and 20th, it fell a little till the 25th, when it rose again and, with one slight fall in the interval, reached 10' 5" on the 8th June. Then followed a gradual fall to 8' 4" on the 2nd July, when it began to rise once more, and finally attained its maximum height for the year (16' 7") on the 18th August.

5. It would appear from this account of the inundation that the river had risen sufficiently high in the early part of May to have afforded many of the canals their first supply; but, except in the case of a few canals, the supply in the river was not made available to cultivators till the end of the month or the early part of June. The report shows for some canals; but not for others, the dates on which they were opened. The Fuleli and Eastern Nara Canals and some others, were opened in good time. Those in the Hyderabad Canals Division were the latest of all. It appears from other correspondence that only two of these canals were opened before the end of May. The rest were opened on various dates between the 1st and 15th June, a fortnight to three weeks later than in the preceding year, and consequently lost the benefit of the first rise of the river. Water was not admitted into some of them until after the second rise had begun to subside.

6. Mr. Lambert dwells on the disheartening effect which a low inundation in June has on the cultivators in curtailing their preparations for cultivation, &c., but, from what the Commissioner has learned from reports by Collectors and seen and heard in the course of his tours, he is convinced that the loss of the first rise in the river has still more serious effect. With the first appearance of water in the canals the people begin to bestir themselves to make preparations for cultivation and, even if the supply comes in before the time has arrived for sowing the staple crops, it is most valuable for drinking purposes and for the growth of green forage and vegetables, as well as for raising seedlings and for wetting land for the plough. There can be no doubt that the area of cultivation is diminished, and that both cultivators and the revenue suffer, when preparations for cultivation are unnecessarily and unduly delayed. Complaints by cultivators of delays in opening canals, and of calls made on them for assistance in completing clearance at times when they ought to have been working in their own fields, have not been absent in recent years.

7. All canals should be in working order by the 15th May at latest, and all ordinary clearance should be completed by the 30th April, to allow of the work done by contractors being measured up and checked before water comes in and renders exact measurement impossible. The popular view—which is very openly expressed—is that contractors in some Divisions delay clearance work in order to prevent check measurements being made by the European officers of the Public Works Department. The Commissioner expresses no opinion as to the correctness or incorrectness of this view, or as to the responsibility attaching to individual officers for delays that have occurred, but as even greater delay in opening canals occurred in 1888, and as delay has again occurred in beginning clearance in some talukas for the current season, notwithstanding the efforts that have been made to press on this work, the Commissioner considers that occasion has arisen for his bringing the subject prominently to the notice of Government.

8. The clearance of silt from canals and the repair of their embankments and heads form the chief work of the Irrigation Department in Sind, and on its due execution the agricultural prosperity of the province mainly depends. A very large quantity of such work, scattered over nearly 8,000 miles of canals, has to be done in the six months of each working season, and though it is work of a simple kind, close supervision must be exercised over it while it is in progress, because much of it is lost to sight as soon as water enters the canals, and contractors can and will scamp it unless they are well looked after. It is of great importance, therefore, that clearance should be begun early, and that Executive Engineers and their chief subordinates should be constantly on the move and exercising supervision throughout the working season. Most of the canals are dry in October, and clearances might well be put in hand early in November, but as a matter of fact very little is done before

January; the whole time of the establishments during the first two months of the season is taken up in preparing plans and estimates, and arranging other preliminaries required by the departmental rules. The Commissioner is aware that the Superintending Engineer and other officers have done all in their power to bring about an earlier beginning of clearance in the current season, but very little improvement has resulted, and it seems scarcely possible that much more will be obtained unless the preliminaries to the execution of work are simplified. Then again, when works are in progress, Executive Engineers and Overseers are unable to devote the amount of personal attention they would wish to give to their outdoor duties of supervision and measurement, as they are constantly occupied in rendering returns and accounts and explanations to the Examiner, Public Works Accounts, the preparation of which confines them to their offices. Some special rules for canal clearance work in Sind, as regards preliminaries to the execution of work, as well as the rendering of accounts and returns of work in progress, would seem to be urgently called for. The executive work of the department would also be greatly facilitated, and the money granted for clearance and maintenance would certainly be more economically and profitably spent, if a definite programme of works to be carried out in each working season could be settled some time before the opening of the season. This is impossible under existing arrangements, as the annual grant

for clearance and maintenance is not a fixed amount, and the Budget allotments* for expenditure in the latter part of each season are not announced until after the season has well advanced.

* Those for 1889-90, i.e., for expenditure after 31st March 1889 have not yet been announced.

This subject has already been brought to the notice of Government, and the Commissioner would strongly recommend that the grant for the next five years be fixed at 9 lakhs of rupees a year, the amount which the late and present Commissioner and the late and present Superintending Engineer for Irrigation are agreed in considering essential for the ordinary clearance and maintenance of Sind canals. If a fixed annual grant cannot be conceded, the amount to be expended in each entire season should be settled and announced not later than the month of July in each year.

9. In para. 3 of his report Mr. Lambert notes with satisfaction the effect of the protective embankments in Upper Sind in improving the river supply to all canals below Sehwan. With reference to similar observations in the report for 1846-87, Government expressed a desire (paras. 8 and 9 of Government Resolution No. 48 W. I. 662 of 1888) that the subject might be further studied and investigated. The present report, however, adds little to the information previously before Government. These embankments, which line the right bank only of the river above Sehwan, were practically completed 9 years ago, and the officers of the Irrigation Department must have formed an opinion by this time of their effects on cultivation, and of their success financially. Since their completion a chain of similar embankments has been gradually extended along both banks of the river, from a point a few miles south of Hyderabad and Kotri to the Delta proper. This double line of embankments does not seem to have been built in pursuance of any definitely stated and sanctioned project, but piece by piece, and the Commissioner has not been able to find any clear exposition of the conditions affected by the undertaking or of the objects it was intended to achieve. The artificial raising of the flood level of the Indus described by Mr. Lambert extends over the part of the river walled-in by embankments on either side, as well as for some distance above it. The influence of the tides makes itself felt within the double line of bunds, and impedes the outflow through them of the river when in flood. The rise in the flood level brought to notice by Mr. Lambert did not apparently attract attention until after considerable progress had been made in the Lower Sind embankments, and may very likely be connected with their construction. It seems to the Commissioner that there may possibly be danger here in years of excessive inundation, or on the occurrence of cyclones or unusually high tides during the inundation season, of some disastrous accident like that which happened on the Mississippi under somewhat similar conditions a few years ago. The embankments on both sides of the river have been breached in almost every year since they were built, although as yet they have been subjected to the pressure of only moderate inundations. They have lately been raised to a height above that of the original design, and the level of the floods held between them must now frequently rise to several feet above that of the surrounding country. In this connexion, the Commissioner invites attention to remarks made by Mr. Lambert in para. 79 of this year's report, as follows:—"although considerable sums have been expended on these embankments during the last few years, their relative strength has not been increased, as the highest level of the river has been yearly rising and almost outstripping the improvements to the bunds." There has been no unusual flood in the Indus since the Upper Sind embankments were completed. The lands on the unprotected left bank have enjoyed equal immunity from destructive floods with those on the right bank since 1880, while the lands on both banks were flood-swept several times between 1874 and 1880, and similar floods may again occur in any year.

10. As regards the effect of the Upper Sind embankments on cultivation between Kashmor and Sehwan, the cultivation affected is that of (a) the whole of the Upper Sind Frontier District; (b) the Sukkur, Larkana, and Mehar Sub-divisions of the Shikarpur District; (c) the Dadu, Johi and Sehwan Talukas of the Karachi District. It must be remembered that

[†] The greater part of the cultivation on the left bank of the river in the Shikarpur District (the Rohri Sub-division) is on lands watered by floods. The revenue collected in these talukas exceeds 5 lakhs of rupees a year.

in the lower reaches of canals. Before the embankments were made the spill from the river wetted lands for kharif cultivation, and filled shallow depressions that were cultivated with rabi crops when the water dried up, as well as deeper depressions that fed the tails of canals, besides giving a direct supply that was lifted on to lands for rabi cultivation and providing large stretches of good grazing. This spill is now completely shut out from Kashmor to Sehwan, and the only water that the protected lands regularly receive is the canal supply, which, except in the Upper Sind Frontier District, is no larger now than it was before the embankments were built. The natural consequence is a vast diminution of the grazing area, as well as of the supply to lands that formerly were cultivated on flood water and to the lower reaches of main canals and their branches, and a general drying up of the lands within the protected area.

11. The heavy floods that did the greatest amount of damage to kharif cultivation and threatened the North-Western Railway and the Military Cantonment at Jacobabad swept in through the Upper Sind Frontier District. The Kashmor and Begari Bunds that were built to exclude them were the first Bunds built, and there can be no question as to their usefulness. They have of course shut out water that was useful along with that which did damage, but the canal supply of the Upper Sind Frontier District has been considerably increased since they were constructed and the result in that district of the twofold improvement is a large increase in the cultivated area. The Shahdadpur Taluka, watered by the tails of the Begari and Ghar Canals, is the only part of the District in which the supply is now deficient. The case as regards the protected area of the Shikarpur and Karachi Districts is quite different. Here there has been no increase of canal-supply since the flood-waters were shut out by embankments. The effect of their construction is illustrated in the following statement, which shows the areas under cultivation in the protected talukas of the Shikarpur District in each year since 1873-74, and the average cultivation for the 6 years before, and for the 9 years after, the completion of the embankments.

No.	Year.	Kharif.		Rabi.		Total.		Remissions.	Net Revenue Realizations.	Remarks.
		A.	G.	A.	G.	A.	G.			
1	1873-74	420,837	27	117,598	0	538,225	30	1,10,238 15 1	12,86,064 4 7	
2	1874-75	467,757	31	174,227	30	641,985	24	2,41,818 11 10	11,68,088 10 11	Flood year.
3	1875-76	398,267	27	132,331	9	530,598	36	31,991 9 5	12,20,861 18 11	
4	1876-77	450,018	19	232,891	32	682,910	12	2,18,937 11 10	11,73,289 3 ■	Flood year.
5	1877-78	349,882	9	128,757	10	473,639	25	1,970 7 0	12,09,898 ■ 8	
6	1878-79	482,454	32	247,204	7	729,658	30	35 ■ 0	14,76,791 7 7	Flood year.
Total.		2,568,713	22	1,028,300	24	3,597,019	12	540,902 15 2	74,74,993 13 10	
Average for six years.		428,119	31	171,383	17	598,603	8	90,008 18 2	12,45,833 5 0	
7	1879-80	357,434	16	194,358	0	491,792	17	5,838 ■ 0	12,61,667 2 6	
8	1880-81	419,240	27	81,698	13	500,937	0	14,271 7 0	12,67,729 4 ■	
9	1881-82	Details not obtainable.		559,607	37	10,082 ■ 0		10,10,109 10 0		
10	1882-83	Ditto.		619,654	10	71,105 1 0		18,39,518 4 0		* Floods in the Shikarpur District consequent on the bursting of the embankment at the Rambuj mouth of the Sukkur Canal.
11	1883-84	Ditto.		459,267	8	22,508 12 ■		16,18,252 5 0		
12	1884-85	419,062	2	126,575	0	544,637	2	26,370 10 6	18,41,526 1 6	
13	1885-86	391,402	7	94,580	18	485,288	25	1,15,211 11 0	15,91,506 6 0	
14	1886-87	427,149	32	106,743	24	512,893	16	96,043 5 0	16,17,341 9 0	
15	1887-88	385,824	22	106,271	7	492,195	20	18,620 14 0	16,71,747 3 0	
Total.		2,400,113	18	628,330	31	4,678,973	24	2,80,157 11 6	1,42,15,093 3 0	
Average for 9 years total cultivation.		...		519,063	29	42,239 11 11		15,78,454 12 10		
Do. 6 years Kharif and Rabi.		4,00,018	36	104,722	0					

12. It will be observed that the total cultivation has fallen from an average of 599,503 acres for the 6 years ending 1878-79 to one of 510,868 acres for the 8 years ending 1887-88; and that kharif cultivation has diminished by 28,100 acres and rabi cultivation by 66,661* acres for the same periods. The actual diminution of cultivation is probably greater than that shown by these figures, for the reason that under the settlements in force in the earlier years

* The discrepancy between the figures showing total cultivation and those showing kharif and rabi cultivation separately arises from the circumstance that details are wanting of kharif and rabi cultivation for three of the series of years to which the total cultivation figures relate.

of the series, assessment was levied only on areas actually cultivated as ascertained by annual inspection and measurement; whereas, under the settlements recently introduced, whenever any portion of a survey number is cultivated the entire number is entered as cultivated and assessment is levied accordingly. The figures in the statement show areas assessed throughout. As might be expected, the contraction in rabi cultivation is much greater than in kharif cultivation, and it would have been greater than it has been were it not for the large number of wells that have been dug in recent years to supplement the canal supply. The decrease in the area cultivated, again, does not fully represent the losses suffered by cultivators, as the outturn of many fields on which assessment has been paid has been seriously diminished by the insufficiency of the available water-supply. Figures have been added to the statement showing the amounts remitted and the net revenue collected in each year of the series. The remissions granted since the embankments were built show a decrease averaging about Rs. 58,000 a year, and the net revenue realizations have increased by nearly Rs. 8,34,000 a year, notwithstanding the contraction of the cultivated area. The increased realizations are almost entirely due to changes in the settlements and rates of assessment levied, introduced during the last 10 years.

13. Cultivation returns for the three northern talukas of the Karachi District, which now depends mainly upon the lower half of the Western Nara, will be submitted separately. The results of the shutting out of the floods from these talukas are similar to those above shown for the Shikarpur District. The same cause has operated to diminish the supply in the Manchar Lake, where cultivation has decreased seriously, especially in the last two years.

14. Throughout the whole of the protected area in the Shikarpur and Karachi Districts the supply towards the tails of all main canals and branches is altogether insufficient, and a general displacement and transfer of cultivation has taken place. The water-supply is now used up on lands lying on the upper reaches of main canals and branches, where, since protection has been afforded by the embankments, cultivation has increased. The zamindars holding lands on the lower reaches of canals have suffered greatly, and there is urgent need for expenditure to restore to them the water-supply that they have lost. This displacement of cultivation is a serious matter. In some cases, but not in all, it has arisen from causes beyond administrative control. The Revenue Department and the Irrigational Department share responsibility for allowing landholders on the upper reaches of canals to use for the extension of their own cultivation water that properly belongs to lands lower down the canals. Many instances have come to the Commissioner's notice in which cultivators have been deprived, as it seems to him unfairly, of their customary water-supply, through the extension of cultivation, or the substitution of rice for dry crop cultivation, on lands higher up the canals. The attention of Collectors and Executive Engineers has been called to this subject. The rules under the irrigational settlements, which permit zamindars to cultivate without restriction rice or any other crop they please, are partly in fault and will be amended. Under former settlements landholders were not allowed to extend their rice cultivation without permission and it will be necessary to restore the old rule, or to enforce some equivalent precaution.

15. The statement in para. 11 above shows that 80,000 acres in Shikarpur, now barren, were cultivated 10 years ago. To this must be added the area thrown out of cultivation in the Karachi District. The contraction of cultivation in the Shikarpur and Karachi Districts, and in the Shahdadpur Taluka, which was transferred a few years ago from Shikarpur to the Upper Sind Frontier District, that has followed the construction of the Upper Sind embankments does not fall far short of 100,000 acres, and there can be no doubt that the resident population can cultivate quite as much land now as it did before 1880. The wealth and resources of the whole province, and especially of Upper Sind, have been greatly augmented by the large Government expenditure on supplies for the Afghan campaigns, and at Quetta, and on railway works in Sind and Baluchistan, while the growth of well cultivation and the high prices now obtainable for land with a canal supply show how eager the people are to extend cultivation. The average assessment on canal lands in the tract referred to may be taken at between 3 and 4 rupees per acre, so that Government will be quite safe in expending 50 lakhs of rupees, or more if necessary, in improving its water-supply. The Commissioner does not think that any improvement of existing canals will suffice to give with constancy the additional supply required, because these canals draw water from a part of the river that is always shifting; their heads are eroded in one year and in another obstructed by silt deposits thrown in front of them, and the discharge through them is always precarious. He would strongly recommend Government to take into immediate consideration the construction of a large supply channel taking off from the river above Sukkur, where its course is more permanently established than in any other locality, to feed the whole system of Ghar Canals, and if practicable those of the Western Nara also. Great part of the supply in the Sukkur Canal is now used up on the lands near the river, and the scheme should embrace the feeding of the tails of that canal. There is a very much better chance of a permanently profitable investment here than in the construction of new feeders to the Ghar and Western Nara drawing their

river supply from any place below Sukkur. The supply of any new feeders constructed there will be just as precarious and unreliable as that of the present channels feeding the Ghar and Western Nara Canals.

16. As regards the effect of the embankments on cultivation *below* Sehwan. Although the rise in the inundation level noticed by Mr. Lambert has raised the head of water in all canals below that town, no great increase of cultivation has taken place upon them as yet. In the Hyderabad District there is every prospect of a very large increase after the completion of improvements to canals in the Hyderabad and Fuleli Canals. Divisions of which a beginning has now been made, but there is no such prospect in the Karachi District, on account of the scantiness of the population and the unhealthiness of the Delta Talukas.

17. Speaking of the embankments generally, the Kashmor and Begari Bunds, and those for some distance below Sukkur, as well as others protecting particular points on the river, are no doubt works of the greatest utility; but the question whether it is safe and otherwise expedient to maintain a continuous chain of embankments along the whole course of the river through Sind would seem to need very careful investigation. The fact that this work has been carried out without sufficient examination of all the conditions involved has already been noticed. The Fuleli Canals and those in the Karachi District were not designed or constructed to carry the additional head of water forced into them by the rise in the flood-level of the river brought about by the construction of the embankments, and large expenditure will yet have to be incurred in raising and strengthening their banks, and in providing drainage channels and escapes for the outflow of their surplus waters, as well as on strengthening the river embankments, if the present head of water is maintained in the river. The remarks made in paras. 79 and 80 of Mr. Lambert's report regarding the flooding of the Delta Talukas and the need for strengthening the banks of the Baghar Canal and for additions to the river embankments should be read in this connexion.

18. The average expenditure on river embankments during the last 6 years, as shown in para. 14 of Mr. Lambert's report, exclusive of the cost of supervising establishments, and the interest on the original cost of construction, has amounted to Rs. 1,90,000 a year. The heavy outlay on their maintenance has necessitated a corresponding curtailment of expenditure on the clearance and repair of canals, and is one of the causes of the unsatisfactory condition of the canals of the Hyderabad District. The charges on account of *abkalani* establishment employed on these embankments are enormous and have been increasing, although apparently they ought to have been reduced as embankments constructed in the earlier years became consolidated. The Commissioner is inclined to the opinion that the embanking of the river generally has been overdone and specially so in Lower Sind, and that the question of the maintenance of the embankments in the Delta Talukas should be considered not merely with reference to their own cost and the risks attendant on them, but also with reference to the expenditure on improvements to canals and drainage that their maintenance will necessitate and the revenue results that the entire expenditure may be expected to produce. The Upper Sind embankments should also be examined, and, if practicable, regulators should be built in them to admit spill-water from the river at places where it can be profitably utilised for grazing and rabi cultivation. Some of the depressions through which flood-water used to enter in former years might apparently be put to good account in this manner.

19. With reference to the remarks in para. 6 of Mr. Lambert's report regarding the grant of remissions, it should be stated that remissions are never granted when a cultivator who has only sufficient water to grow a dry crop—bajri or jvari for instance—speculates and tries to grow rice, or any other crop that requires a superior supply. They are only granted in cases in which cultivation reasonably attempted has failed through insufficiency of the water-supply or has been injured by floods or other causes beyond the cultivator's control.

20. The figures given in paras. 7 and 8 of Mr. Lambert's report are for the financial year ending March 31st, and on that date, as explained in para. 5 of the Commissioner's forwarding remarks on the report for 1886-87, several instalments remain to be received. The collections on account of *hakaba* in the revenue year show an increase of Rs. 4,291-4-11 over those of the previous year. The miscellaneous revenue is collected by the Revenue Department direct, and by the Mukhtiyarkars on the requisition of the Executive Engineers. The decrease is mostly in the Eastern Nara and Fuleli Divisions and is principally due to decreased receipts from farms of fisheries in canals and dhands. The following statement shows the state of outstanding balances at the end of the revenue year 1887-88 as contrasted with those of the previous year:

* Revenue owing to decreased revenue [Rs. 2,34,000] from lands in Kalki territory, the arrangements regarding which are set in the hands of the revenue officers in Sialkot, and to decreased revenue in the Hyderabad and Karachi Districts, owing to lower ground level cultivation in Jigir.

The outstanding balances are chiefly an account of hakaba on lands in Kalat territory. The Government of Bombay referred to this subject in para. 15 of their Resolution No. 48 W. L. 622 of 27th March 1888, and the Government of India in their Resolution No. 961, dated 22nd May 1888, remarked that "matters connected with Irrigation Revenue and Remissions" were not in a satisfactory condition in Kalat territory. See also correspondence ending with this office No. 8244 of 13th September 1888.

21. The Commissioner fails to follow Mr. Lambert in the remarks made in the 9th para. of the report regarding the two classes of political pensioners. It is hardly correct to speak of the Jagirdars of Sind as "Imperial Pensioners." A few of them received jagirs in lieu of pensions after the conquest, but the majority of them are properly speaking privileged landholders; and in some cases they or their predecessors in title originally excavated canals now controlled by the Irrigation Department and were in possession of their estates and water-supply before Sind became a British province. In such cases it would be by no means easy to make the adjustments suggested; still, the Commissioner has no doubt that in some instances, notably in the case of jagirs in the Hyderabad District, additional contributions in the shape of enhanced hakaba may be possible, and this subject is engaging his attention.

22. The balances reported in Mr. Lambert's para. 11 agree with those given by the Collectors and Deputy Commissioners as outstanding at the end of the revenue year. In the Upper Sind Frontier District postponements were granted in the Shadadpur Taluka on account of deficient water-supply, and there is a disputed item due by Mazari Chiefs residing in the Dera Gazi Khan District of the Punjab, who refuse to pay until the terms on which they are to be allowed to hold land on the Frontier of Upper Sind are settled. This matter is before Government. In Karachi, postponements were granted by the Collector up to December 1888 and April 1889, owing to failure of crops, and there are some items due by the Manager, Incumbered Estates. In Shikarpur and Hyderabad the balances are due principally by the Manager, Incumbered Estates.

23. The diminution in remissions granted, reported by Mr. Lambert in para. 12, is very satisfactory. The largest remissions for the year occurred in the Begari, Ghar, and Karachi Divisions. Those in the two former were mainly due to insufficiency of water-supply in the tails of the canals, and those in the Karachi District to breaching of the river embankments.

24. The Commissioner considers it unnecessary to follow Mr. Lambert in his detailed observations on the working of the various canals, but he will state his opinion on this subject generally, as well as with respect to several details noticed by the Superintending Engineer on which comment seems desirable. The canals in the Upper Sind Frontier District are in good order, and do the full work required of them, except in the Shadadpur Taluka, the irrigation of which is to be transferred from the Begari to the Sukkur Canal when the improvements suggested for the latter are carried out. The same may be said of the Eastern Nara Canals. The condition and management of the canals in these two divisions reflects, in the Commissioner's opinion, very great credit on the Executive Engineers who have long held charge of them, Messrs. J. A. Coghlan, and J. Young. An additional water-supply for part of the Upper Sind Frontier District is immediately available if the head regulator on the Sind Dora (where it passes through the Kashmor Bund) is worked. Inquiries are being made with a view to the early utilisation of this supply, if practicable. The few canals in the Shikarpur Division are in fair order, and the irrigational condition of the division is creditable to Mr. Single, the Executive Engineer in charge, though undue delay occurred in opening the canals in the year under report. The canals in the Ghar Division, excepting the Sukkur Canal, have not worked well for some years, owing to constant changes in the river. They also were not opened soon enough in the year under report. The supply they carry is quite insufficient to meet the present requirements of cultivation. An increase in the rabi supply admitted into the Sukkur Canal is very desirable, and apparently might be provided at very moderate cost by increasing the discharge capacity of the regulator. The deficient supply in some branches of the Ghar has been supplemented at different times by cutting feeders to them from the Western Nara. This abstraction of water from the Nara has of course reduced the supply in the lower part of that canal, and has caused a contraction of profitable cultivation in the Karachi District, causing loss and hardship to zamindars who had a better claim to the supply. The Commissioner entirely agrees with Mr. Lambert as to the expediency of placing the whole of the Western Nara under the charge of a single Executive Engineer.

25. The canals of the Hyderabad District, speaking generally, are not in a satisfactory state. Those in the Hyderabad Canals Division are low-level "lift" canals, and sufficient attention has not been paid to them for some years. Few, if any of them, have been cleared to their bed stones or to their full width, and the heads of some of them are in bad order. The expenditure made on them from the clearance grant for the last five years is shown in

Years.	Clearance.	Repairs.	Establishments.
1882-83	1,20,814	11,210	18,487
1883-84	1,10,416	9,758	20,018
1884-85	98,600	20,027	21,901
1885-86	74,349	20,724	21,870
1886-87	77,344	21,326	25,719

the margin. It will be noticed that the expenditure on clearance has materially decreased year by year, while that on establishments has increased from Rs. 18,487 in 1882-83 to Rs. 35,719 in 1886-87. The charges under the head "Repairs" relate mainly to "jungle cutting," which is work

of a very unprofitable nature and might well be postponed when money is wanted for silt

clearance. The charges for jungle cutting have been unusually heavy in this division, and they, as well as establishment charges, ought to be reduced considerably. There is great need for increased expenditure on these canals. They seem to have been viewed with disfavor by the Irrigation Department, because they are "lift" canals and their returns per acre irrigated are lower than those of "flow" canals; but the population cultivating from them is as industrious, and the cultivation is as good, as any in the province. The cotton grown in this division is the best in Sind. There is no lack of resident population, and any amount of additional labour wanted can be obtained from Jeysalmir and Jodhpur, from which States a considerable immigration has already set in to the lands under the Eastern Nara Canals. The only thing necessary to lead to a large extension of cultivation here is improvement of the existing canals. Until this is effected, no good use will be made of the improved river-supply that is now available to them. The need for improvement is greatest in the Sakrand, Shahdadpur, Hala, and Taando Allahyar Talukas, where cultivation has fallen off. Small improvements made last season at the Collector's instance in the Naushahro Sub-division produced very good results and paid for themselves at once. The Executive Engineer in charge of this Division and most of his chief subordinates live in Hyderabad, outside its limits and at a long distance from their work. The Commissioner thinks that the Executive Engineer's head-quarters should be transferred from Hyderabad to Daulatpur, where a good bungalow is available, or to some other place in the centre of the Division.

26. The present water-supply in the Fuleli is perhaps the finest in the province, and after it has been brought under control by improvements now begun and the lands towards the tails of the canals have been reclaimed by clearing the silted up drainage channels, a very large expansion of cultivation and of revenue will be apparent. For several years previous to the year under report the clearances on the Fuleli Canals were altogether insufficient and many zamindars have suffered very severely from the swamping of their lands by the recurring overflow of canals whose beds and tails were blocked with silt. It will be necessary for some time to come to devote a considerable share of the clearance grants to the canals in the Fuleli and Hyderabad Canals Divisions to make up for deficient expenditure on clearance in the past. Expenditure is also required to fit the Fuleli Canals to carry the increased volume of water now poured into them and for the construction of regulators to distribute the supply. Government have recently allotted funds for the construction of a regulator at the head of the Fuleli main canal, and the Commissioner trusts that they will make further grants for the provision of additional regulators and other improvements needed, as he is satisfied that the expenditure will be immediately profitable in a marked degree. Money for these works cannot be spared from the grants for maintenance and repairs and the cost of their execution would not form a proper charge against those grants. A well digested project for the gradual improvement of the Fuleli Canals to suit the changed condition of their river supply should be drawn up and submitted for sanction after full consideration of all the conditions to be served, and each approved work should be executed in the order of its importance as decided on in consultation with the Revenue officers. The total expenditure, ordinary and special, on these accounts will amount to several lakhs of rupees, and it should be made under proper sanction and systematically. Clever men and capitalists of Hyderabad have grasped the situation and have acquired rights to water in favourable positions high up the canals which should not be extended beyond their just limits. There will be many claimants to the improved supply, and the claims of those zamindars whose lands have been flooded and thrown out of cultivation by no fault of their own should receive the first consideration. Special attention should be paid by the Executive Engineer and the Collector, whilst the improvements are in progress, to the private watercourses through which water is drawn from the canals. Reference is made to this subject in another sense in para. 74 of the Superintending Engineer's report. Since the canals have fallen into their present surcharged condition, the Irrigation officers have encouraged landholders to enlarge the heads of their watercourses and to keep them constantly open and to allow water to flow continuously over rice crops and to make new openings to lead water on to uncultivated lands, in order to reduce the pressure on the canal banks and prevent their breaching. All these watercourses have been shewn in the maps prepared by the Survey Department for the settlements just made in the Fuleli Talukas, and unless the matter is taken in hand and dealt with promptly, unfounded claims to water-supply and complications are likely to ensue hereafter. It is very desirable that the number of private watercourses should be reduced, as also the dimensions of the heads of many of them. The Collector and the Executive Engineer should do all in their power to encourage zamindars to build masonry heads to them, and the Collector should grant loans freely for this purpose. Another matter connected with the Fuleli water-supply that requires attention is the use made of it on jagir lands and the hakabo paid for it. There are large jagirs on the Fuleli and the jagirdars use more water than they pay for. They are only required under the Hakabo Rules to pay for water irrigating cultivated land, and they pay nothing for land wetted but not cultivated. The cultivated area is ascertained each year, and Re. 1 per acre is charged for the water-supply. Their cultivators let water flow continuously over their rice fields whenever they can get it, for the sake of the silt that falls and fertilizes the soil, and the surplus water is led off on to low-lying lands that grow grass and other useful products. The jagirdars should be required to build regulators at the heads of all their canals which should be worked under the orders of the Executive Engineer, and those who use a continuous supply for rice cultivation should pay a higher rate of hakabo and something should also be charged for water used on lands that are not cultivated.

27. The question of levying some payment for the use of Fulchi water irrigating zamindari and unoccupied grazing lands has been noticed by Government, and the subject has received attention from the Collector of Hyderabad and the Commissioner. Most of these lands are in the flooded portions of the Tando Bago, Badin and Guni Talukas, and many of them were formerly cultivated and will be cultivated again when the canals are put in order. Colonel Trevor is averse to the levy of grazing fees at present, on account of the impoverished state of the cultivators who own many of the cattle and the hardships that they and the zamindars have suffered by the flooding of their lands, and the Commissioner agrees with him to a certain extent. But the question should soon now be taken up in earnest, as the *Haris* (labouring cultivators) are becoming demoralized and inclined to neglect cultivation for breeding and grazing milch cattle, which affords a very easy means of livelihood when grazing is free.

28. The condition of the canals in the Karachi District may be described as good in the Delta Talukas and unsatisfactory in the talukas above Manjhband. Clearance has been neglected on the Western Nara, as shown in para. 77 of Mr. Lambert's report; but the silting of the Aral and other canals connected with the Manohar Lake is due to causes practically beyond control. A very large expenditure has been incurred on canals and river embankments in the Karachi District for some years past, but the results obtained have been altogether incommensurate with the outlay, as is shown by the figures given in para. 81 of the report. The bulk of the money has been spent for the benefit of the Delta Talukas, whose population is scanty and thinned by fever and frequent outbreaks of cholera and other epidemic disease. The average charges against the canal revenue of these talukas for the last five years probably exceed 80 per cent. of the receipts, and there is no reasonable expectation, in the Commissioner's opinion, of any large increase of cultivation occurring in them even if expenditure at the present rate is continued. Drainage works are now talked of, and their construction would doubtless tend to improve cultivation and probably the sanitary condition also, but their cost will be considerable. These talukas would probably have returned a much larger net revenue than they do at present, if they had been treated in the same way as the Rohri Sub-division and left to depend mainly on spill-water for their irrigation. The whole position in these talukas as regards present and prospective expenditure and realizations and the risks run in the attempt to retain the river floods at a high level between the double line of embankments referred to in paras. 9 and 17 above needs careful examination, and the Commissioner thinks that the Superintending Engineer should be called on for a full report on the subject. If expenditure in these talukas can be curtailed, the money set loose can certainly be expended much more profitably elsewhere.

29. The question raised in para. 38 of the report regarding the assessment of dubari cultivation on the Sukkur Canal is under consideration. There is a difference of opinion as to the facts of the case, and as to the remedy to be applied. It appears that the greater part of the 18,818 acres reported by the Superintending Engineer as cultivated with both kharif and rabi crops was irrigated in the kharif season only, and received none of the rabi supply; much of it is rice land on which a second crop was raised on the moisture remaining in the soil after the rice crop was harvested. For such poor rabi cultivation as this the rate settled by Mr. Erskine is probably as sufficient in the case of the Sukkur Canal as Mr. Lambert admits it to be for other canals. For lands for which both kharif and rabi supply is taken the rate is certainly insufficient, and the question pending settlement is as to the treatment of such twice-watered lands. The Commissioner is inclined to think that the best immediate solution is to refuse a rabi supply to lands cultivated with kharif crops, as both the kharif and the rabi supply at present available in the canal are insufficient to meet the whole demand for water, and what there is ought to be distributed as evenly as possible. Mr. Lambert has not noticed the extent of the rabi supply discharged through the Sukkur Canal or the area that it sufficed to irrigate.

30. Rice cultivation on the Ghar Canals, to which reference is made in paras. 39

	Rice.	Juari.
1878-79	151,127	24,848
1879-80	167,495	10,804
1880-81	170,842	24,518
1881-82	133,424	34,860
1882-83	146,638	49,803
1883-84	135,817	13,508
1884-85	153,448	20,752
1885-86	141,787	11,292
1886-87	128,880	28,230
1887-88	44,630	81,089

and 41 of the report, has fallen off considerably in the last few years, and in the year under report juari was largely cultivated on rice lands. The areas under rice and juari respectively in each of the last 10 years are shown in the margin. In the Larkana Taluka, where the revised settlement is still in force, the insufficiency of the canal supply has pressed heavily on zamindars holding lands assessed at rice rates, who have had

to choose between leaving their fields uncultivated and growing inferior crops. If the juari crop had not been an unusually good one, and if prices of produce had not ruled at exceptionally high rates, in the year under report, the remissions on these lands would have been heavy.

31. The special clearance on the Gul Mahamedwah branch of the Western Nara, noticed in para. 43 of the report, led to new cultivation on lands commanded by the Ghar. The revenue thus obtained in the Shikarpur District was realized at the cost of the Karachi District, and the diversion of the water-supply was unfair to landholders on the lower part of the Western Nara Canal, who were deprived of water to which they had a distinctly prior claim. Another and larger diversion of water from Nara to Ghar lands has resulted from special clearances in the Arthurwah, begun in the year under report and finished before the inundation of 1888. The Arthurwah is a branch of the Western Nara, and the special clearances, on

which Rs. 26,000 were expended, included the widening of the regulator at its head, the construction of a second regulator half-way down it, and the excavation of some three miles of new canal to join it with the Chilowuh, a branch of the Ghur insufficiently supplied from the main canal. This work should not have been executed in presence of the known insufficiency of the supply in the lower part of the Western Nara, and it is not a work that should have been executed at the cost of the Maintenance and Repairs grant. Increased attention should be paid in carrying out new works and improvements to the customary rights of landholders in the matter of water-supply, and the attention of Collectors and irrigation officers has been drawn to this subject.

32. The results reported by Mr. Lambert in para. 48 for the Eastern Nara Canals are most satisfactory and encouraging. The Commissioner understands that the water drawn from the river through the existing supply channel at Rohri is now doing nearly all the duty that can be got out of it, and that some expansion of the river supply will very soon become necessary. A branch taking off from the Jamrao Dhand to water the eastern part of the Sakrand and Shahdadpur talukas of Hyderabad is very much wanted, and would pay as well as any of the canals of the system. Part of this tract was watered from the Nara some years ago, but the supply was cut off when the works for the new canals were undertaken. There is every prospect of a large increase of cultivation and of revenue in the Nara Valley, and no want of labour for cultivation. The great want of the district is railway communication with Hyderabad, in order to give its cultivators a good market for their produce. A project for a cheap feeder-line from the Nara river to the North-Western Railway is before Government.

33. The Commissioner cannot admit the justice of the remarks made by the Superintending Engineer in para. 74 of his report attributing the numerous breaches of canal banks that occurred in the Fuleli Division to the neglect of zamindars and cultivators to keep in proper order the heads supplying their private water-courses. These accidents and the damage they occasioned were mainly the result of insufficient clearance and the silting up of the tails of the Fuleli Canals, coupled with the increased volume of water poured into the Fuleli Main Canal by the rise in the flood level of the river, to which reference has already been made. The construction of the regulator at the head of the Fuleli lately sanctioned, and the clearance of the tails now in progress will diminish the risk of breaches in future years.

34. The project for a new feeder to the lower part of the Western Nara, referred to in para. 77 of the report, has been submitted to Government, with a recommendation that the condition of the whole canal should be thoroughly investigated before decision is come to regarding the steps to be taken for improving its supply. The examination on which the project is based extended only to that part of the canal which is in the Karachi District.

35. The Commissioner has not supported the project for improving the Kalri Canal mentioned in para. 80 of Mr. Lambert's report, because he does not think it likely to lead to any real extension of cultivation, as full use is not made of the supply already afforded by canals in the Delta Talukas.

36. The present report, following the scheme of former reports, contains full information regarding the revenue results obtained in each Canal Division, but few details regarding the progress of cultivation. Fluctuations in revenue collections are dependent in great measure

* See the table in para. 11 above, and remarks in para. 12. on settlements in force and rates of assessment levied,* and conclusions as to the condition and working of canals cannot safely be founded on a consideration of their revenue returns alone. It seems desirable that in future reports cultivation returns for each Canal Division, and for each important canal, should be added for the same series of years for which revenue figures are given. The following form is suggested as convenient for the cultivation returns:

V	Cultiva- tion re- ceiving a percu- tial sup- ply.	KHARIF.						RABI.						Total cultiva- tion.	
		Rice.	Juari.	Bajri.	Other crops.	Total Kharif.	Wheat.	Other crops.	Total Rabi.						
A.	G.	A.	G.	A.	G.	A.	G.	A.	G.	A.	G.	A.	G.	A.	G.

37. It is desirable also that a clear and comprehensive account should be given in these reports, or separately, of the manner in which the grants for maintenance and repairs and for

extensions and improvements are applied and expended. The average expenditure under these heads of the last 6 years, as shown in para. 13 of the report, has amounted to more than Rs. 11,00,000 a year, but the only information published regarding it is that contained in the brief summary given in the General Administration Report prepared in the Public Works Secretariat. The Superintending Engineer should give an account of his stewardship, and the operations of the Department should be laid open to examination and criticism.

38. The grants made, large as they are, are admittedly insufficient to allow of the simultaneous execution of every desirable improvement. The money available must be spent economically, and it is most necessary that canals should be cleared to their full depth and width, that their banks should be repaired, and that their heads should be put into the best working order possible, before expenditure is devoted to other work of less immediate utility. If this principle is to be observed, a clear account of work executed and expenditure made must be rendered. Each canal has its sanctioned section, and its condition with reference to that section should be reported yearly and explanations should be given of deviations from the standard. A full description of the work executed in each Canal Division should be given, and the expenditure incurred should be classified under some such heads as the following :

- (1) Silt clearance.
- (2) Repairs to canal embankments.
- (3) Clearance and improvement of canal heads.
- (4) Jungle-cutting and removing fallen trees.
- (5) Inspection path-ways along the sides of canals.
- (6) Construction and repairs of inspection bungalows.
- (7) Construction and repairs of canal chowkies and tool-houses.
- (8) Regulators and sluices.
- (9) Sloping canal banks and cutting of angles.
- (10) Establishments charged against works. The expenditure under this head should be shown in clear detail—the rates of pay allowed, the number of men employed at each rate, the periods of their employment, and the manner of their employment, should be stated and increases and decreases should be shown and accounted for.

Corresponding details should be given regarding expenditure on river embankments in each Canal Division. It will then be possible to contrast the expenditure made in the several divisions and to compare it with the results obtained. Good management or the reverse on the part of the Divisional Officers will be apparent and improvements effected in one division may be extended to others.

39. Some figures of expenditure are given in paras. 13 and 14 of Mr. Lambert's report, but they are not in sufficient detail for administrative or critical purposes, and while they nominally show the expenditure on "Establishments" separately from that on "Works," they do not show the actual outlay under either head. The Establishment charges entered are only those on account of the Permanent Establishment of Executive Engineers, Supervisors, Overseers, Clerks, &c., &c., but other large charges are also incurred on account of Establishments and are included under the head "Works." The following statement exhibits the actual outlay on Works and on Establishments respectively for five of the years treated by Mr. Lambert. Figures for the years 1881-82 and 1887-88 are not in the Commissioner's possession :

Year.	Works.	ESTABLISHMENT.			Total expenditure.
		Permanent.	Charged against works.	Total.	
1882-83	6,47,604	2,22,086	2,21,387	4,43,423	10,91,027
1883-84	6,42,580	2,14,128	2,36,230	4,50,358	10,92,944
1884-85	6,10,523	2,13,717	2,49,234	4,56,951	10,67,474
1885-86	5,72,872	2,48,524	2,58,276	5,06,800	10,79,672
1886-87	5,54,167	2,71,980	2,73,785	5,45,695	10,99,862
Total	30,27,742	11,70,335	12,82,893	24,03,227	54,90,969
Average	6,05,548	2,84,067	2,46,578	4,80,645	10,86,193

The establishment charges thus amounted to 79 per cent. on the outlay for works and, considering that much of the work done was earth excavation and embankment executed under contract, they appear enormous, after making allowance for the *akkalani* establishments employed

during the inundation season to watch embankments. It will be observed that while the outlay on works has steadily diminished from Rs. 8,47,604 in 1882-83 to Rs. 5,54,157 in 1886-87, that on establishment has progressed year by year from Rs. 4,43,123 to Rs. 5,45,895. Other instances brought to notice in the foregoing remarks indicate that there is room for improvement in the application of the Maintenance and Repairs grants, and the Commissioner thinks that cause has been shown for the submission of a more detailed account of the administration and expenditure of the Department than has hitherto been supplied. The Revenue officers, who are in the best position to ascertain and represent the wants of the people in the matter of water-supply and are responsible for the working of the revenue settlements the maintenance of which depends on irrigation should have a greater voice than has been allowed them in directing the expenditure of the maintenance grants. The work to be executed in each season should be settled in consultation between the Revenue and Irrigation officers and the programme settled on should be carried out.

40. A large share of the maintenance grants has been devoted for the last 10 years to the protective embankments along the river, and the Commissioner concurs in the opinion expressed in para. 14 of the report as to the advantage of setting free a portion of that outlay for expenditure on canal clearances, which, as Mr. Lambert says, "are invariably attended with increased cultivation and revenue." He also concurs in the recommendation made by Mr. Lambert in the same para. that the North-Western Railway should be required to contribute its share of the cost and maintenance of the Upper Sind river embankments, which were doubtless constructed and are maintained partly for the protection of that railway against floods.

41. In the above imperfect review the Commissioner has found occasion to comment in an unfavourable sense on some of the work of the Irrigation Department in Sind, especially in the matter of the direction of expenditure of the Maintenance and Repairs grants. His attention was specially attracted to this subject by the circumstance that his predecessor, Mr. Erskine, reported to Government shortly before he left Sind that some of the revenue settlements made in the last few years could not be maintained unless more money was spent on the clearance of canals, and that not long after he had taken up the office of Commissioner he was obliged to submit a similar representation. Government were pleased to accept the recommendations submitted by the Superintending Engineer and supported by the Commissioner, and made a liberal additional grant at the beginning of 1888 that has sufficed to improve the condition of many of the canals. But much remains to be done, and no prospect has been held out by Government of any permanent addition to the clearance grant, while under present financial conditions no increase can be immediately expected. It is therefore essential that irrigational expenditure should be economised in every way possible, and that it should be confined to works that are necessary for securing water-supply to lands the holders of which have a rightful claim to water, until those claims are satisfied. It was necessary that an examination of the expenditure of past years should be made, in order to discover items in which economy may be exercised, as well as items the execution of which will bear deformity. Some of the criticisms offered by the Commissioner accordingly refer to conditions and circumstances with which he was not personally conversant, and he would not have referred to them if other means had been open to him of forming conclusions and suggesting improvements that seem to him to be called for. He desires to acknowledge the ready and cordial assistance he has received from the Superintending Engineer in this inquiry, as well as in all other matters, and the excellent work done by Mr. Lambert and the officers of the Sind Irrigation Department during the year under report.

C. B. PRITCHARD,
Commissioner in Sind.

General Abstract of Financial Results of Irrigation Works in
Sind for and up to the close of 1887-88.

General Abstract of Financial Results of Irrigation Works

	WORKS IN										
	MAJOR WORKS—PROGRESSIVE WORKS					MINOR WORKS AND NAVIGATION—WORKS FOR WHICH CAPITAL					
	Deputy Canal.	Umbarwah.	Durgi Canal.	Eastern Nâra Works.	Total.	Sukkur Canal.	Ghar Canal.	Mohrabwah.	Alibher Kacheri Canal.	Mânh Great Canal.	
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
<i>Capital Outlay.</i>											
During year.	57,155	10,229	6,089	1,18,753	1,87,226	...	...	...	...	...
{ Direct											
} Indirect	1,352	242	144	4,877	6,615	...	...	...	...	...
	TOTAL	68,507	10,471	6,233	1,18,630	1,89,841	...	...	...	...
To end of year.	11,70,780	8,81,027	18,25,609	49,00,601	80,94,617	18,28,747	4,15,537	66,018	23,207	1,98,000	
{ Direct											
} Indirect	38,568	7,268	47,470	1,58,184	2,79,401	59,960	25,440	1,861	710	7,958	
	TOTAL	12,16,348	3,88,915	16,73,070	50,82,735	83,11,078	18,88,713	4,40,977	67,869	20,917	2,01,563
<i>Gross Revenue.</i>											
During year.	36,971	40	25,401	15,989	78,491	1,131	4,874	202	650	2,203	
{ Direct											
} Indirect	21,700	53,206	2,15,748	9,12,523	6,73,180	97,893	3,42,782	23,181	4,109	45,204	
	TOTAL	1,29,680	53,246	2,41,239	8,28,512	7,51,077	90,024	3,47,450	23,883	4,769	47,407
To end of year.	1,67,896	73	2,40,813	5,42,066	9,51,747	18,063	1,85,531	718	10,265	46,962	
{ Direct											
} Indirect	19,47,410	1,18,129	95,00,408	48,20,650	92,96,601	8,28,227	1,09,86,879	1,08,163	89,958	6,97,227	
	TOTAL	15,15,315	1,18,201	97,41,216	48,68,616	1,02,38,848	8,41,290	1,11,72,410	1,08,881	1,00,223	7,43,189
<i>Working Expenses.</i>											
During year.	49,588	16,860	89,096	87,063	2,86,607	43,571	1,60,740	9,188	6,967	18,183	
{ Direct											
} Indirect	1,337	361	1,925	2,813	6,416	900	1,419	198	168	376	
	TOTAL	50,925	17,201	85,021	89,876	2,43,028	44,480	1,64,159	9,386	6,126	18,550
To end of year.	4,88,374	42,083	17,91,526	23,28,099	45,99,082	7,90,991	81,15,794	63,071	94,810	2,61,921	
{ Direct											
} Indirect	12,867	923	48,541	1,03,897	1,66,168	29,500	70,894	1,501	2,875	6,394	
	TOTAL	4,61,141	43,000	18,40,067	24,91,926	47,60,160	8,13,791	31,85,688	64,572	37,985	2,58,815
<i>Net Revenue.</i>											
During year.	77,755	36,045	1,66,218	2,38,638	6,08,054	54,544	1,88,267	18,097	-1,368	28,908	
To end of year.	10,64,174	76,195	19,01,140	24,81,080	54,72,109	27,490	79,85,722	30,309	2,538	4,84,874	
<i>Simple Interest.</i>											
During year	45,028	18,060	64,902	1,93,749	3,17,639	...	...	...	...	...
To end of year	4,82,623	38,483	9,56,145	32,58,965	47,45,218	...	...	...	...	...
<i>Net profit after paying off Interest.</i>											
During year	31,827	22,985	91,318	44,837	1,91,015	...	...	...	...	...
To end of year	6,01,551	26,712	9,46,004	-8,57,286	7,28,982	...	...	...	...	...

Note.—Direct outlay under Working Expenses includes share of cost of

in Sind for and up to the close of 1887-88.

OPERATION.

Corrections in the Civil Department

C. CUNNINGHAM,
for Examiner of Public Works Accounts.

GOVERNMENT OF INDIA.
REVENUE AND AGRICULTURAL DEPARTMENT.

Weather Review of India for the week ending at 8 a.m. on
Monday, July 1st, 1889.

Normal monsoon conditions have prevailed throughout the greater part of India during the past week. On some days the currents have been partially interrupted, and hence their extension into a large portion of North-Western India has not been complete, and that part of India has been more or less rainless with a high temperature. With this exception, however, rain has been general, and at several stations has been heavy. Accompanying this general rainfall, there have been moist cloudy weather and comparatively low temperatures.

The Chart of the 25th June exhibited the ordinary high pressure area over the Malabar Coast and the ordinary low pressure area over the Indus Valley; but, in addition to this, there existed an area of relatively low readings over the head of the Bay of Bengal, the east of the Central Provinces, and the whole of the North-West Provinces. Within this low pressure were three centres of depression—one over the north-western angle of the Bay, a second over Behar and the east of the North-Western Provinces, and a third between Nowgong and Agra. These depressions occasioned local cyclonic circulations of the wind over the portion of India covered by them, but elsewhere normal monsoon breezes prevailed. The monsoon over the Peninsula was fresh, and over Sind, Guzerat, Central India, and Rajputana strong. On the following day the depression over the Bay had developed somewhat and become a well defined storm. That which lay over Behar and east of the North-Western Provinces had moved slightly westward, and absorbed into it the small Nowgong-Agra disturbance. With these exceptions, there had been no change of importance in the distribution, and the winds direction and force were generally unaltered. By the morning of the 27th the small depression which had been shown over the north-west angle of the Bay had passed westward, and had also become absorbed into the general depression over the central parts of the country. A well marked cyclonic circulation existed around this depression, but otherwise the winds were normal. The Chart of the 28th showed that the depression, without changing its intensity, had advanced west-north-westward through the Central Provinces, and that its centre lay near Saugor. The cyclonic circulation around it was very well marked. Normal winds prevailed elsewhere, though over the head of the Bay the force of the wind was exceptionally high. Between the 28th and the morning of the 29th the storm moved north-westward, and at 8 A.M. on the 29th the centre lay immediately to the south-east of Ajmere and Jeypore. There was no alteration in the winds. They continued to circulate cyclonically around the storm area, and to blow strongly both over the Bay and across the West Coast. The observations of the 30th showed that the barometer was rising in all districts, except North-Eastern India, and that the depression which lay near Jeypore on the 29th had filled up after an existence of nearly a week. There was much less difference of pressure between the south and north of India than is ordinarily the case at this season of the year, and there were again indications of a tendency to depression formation over Bengal. With the decrease in the barometric

gradient noticed above, there had occurred a decrease in the force of the monsoon currents, which were moderate only on both sides of India. The Chart of the 1st July showed that a depression was commencing over Central Bengal. Otherwise there was little alteration, and the monsoon currents remained below the normal strength.

Temperature.—The departures of temperature from the normal have been much less during the past week than during the two or three preceding weeks. The monsoon current, with its cloudy skies, high humidity, and fairly constant rain, has prevailed over the greater part of the country and, except where local heavy falls of rain have occasioned rapid local changes of temperature, has maintained a fairly constant temperature. The largest variations from the normal have occurred in Sind, Guzerat, and Rajputana; the smallest in Burma. The former districts were those where the monsoon currents were most intermittent in their action, while the latter district was steadily influenced by them throughout the week.

The past week was a cool one generally, but especially so in Bengal and the North-Western Provinces, where on every day of the week the average mean temperature was below the normal.

The following table shows the excess or defect of the mean average temperature of the different Provinces from the normal, both for the present and for the preceding week:

PROVINCE.	Difference of Mean Temperature of Last Week from Normal.	Difference of Mean Temperature of Present Week from Normal.
Burmah	+ 0.1°	
Bengal	- 1.3°	- 1.3°
North-Western Provinces	- 6.8°	- 2.5°
Punjab	- 3.7°	+ 0.6°
Bombay	+ 0.2°	- 0.3°
Central Provinces and Berar	- 2.0°	+ 0.5°
Guzerat and Central India	- 3.3°	- 1.1°
Sind and Rajputana	- 2.3°	- 1.4°
Madras	+ 0.5°	- 0.1°

From this table it will be seen that the relative coolness is less this week than last. A slight excess has replaced in the Punjab and Central Provinces the considerable deficiency which prevailed last week, while elsewhere the deficiency is generally slighter than it was last week.

Rain.—The distribution of rain has been approximately the same as that reported last week. Over the greater part of the country rain has fallen generally and almost daily, but in North-Western India it has been scattered and partial and entirely absent at some stations. In Southern Madras similar conditions have prevailed.

The following is a brief description of the daily distribution of rain. On the 25th there was no rain reported from the Punjab, Rajputana, Sind, or Eastern Madras (south of Masulipatam), but general rain elsewhere,—heaviest in Bengal. The reports of the succeeding day showed a similar distribution, except that rain had extended north-westward along the line of the hills in the Punjab. The amounts were generally moderate. The only change shown by the reports of the 27th was the much heavier fall on the West Coast, where Mangalore reported 3 inches, Karwar 6, and Goa 7 inches. On the 28th general rain continued with patches of large amounts over the central stations and the West

Coast. On the 29th the amount of rainfall had become much slighter; but the area covered remained unchanged. On the 30th the falls were still lighter, and on the 1st both the amount of the rainfall and its extent had alike decreased.

The table at the close of the summary shows that at 32 out of the 51 divisions into which India has been divided the average rainfall of the week has been exceeded, and that at 17 the rainfall has been deficient, though in the majority of cases the deficiency has been small, not reaching 1 inch.

In Burmah, Tenasserim, and Arakan, show that notwithstanding heavy local rain at Akyab, the week's fall has been short of the average; but in Lower and Central Burmah there is an excess. Excessive rain is also reported from the whole of Bengal, the North-Western Provinces (East), (West), and (Submontane) and Oudh (North); but in the North-Western Provinces (Central) and Oudh (South) there has been a deficiency of about half an inch. In all parts of the Punjab, except the hill districts and the Indus Valley, there have been deficient rains. The Malabar Coast had slightly, and Coorg considerably, less than usual while Madras (South Central), Mysore, and the Konkan had an excess. The whole of the district comprising the Deccan, Khandaish, the west of the Central Provinces, and Kattiawar had deficient rainfall, while Guzerat, Central India, Rajputana, and Sind had more than usual. In Madras there was a general though slight excess.

The maximum falls are as a rule not remarkable. Cherrapunji had 27 inches, and some stations in North and Central Bengal between 10 and 12 inches. Behar, both North and South, and the adjoining parts of the North-Western Provinces received falls of between 10 and 12 inches; but further to the westward the amounts decreased, and there was nothing very important over Upper India. In the Malabar Coast districts falls of 13 or 14 inches, and in the Konkan of between 16 and 19 inches, are reported. At one station in the Kolhapur district of the Deccan 20 inches were received. Fair, moderate rains were experienced over the Central parts of the country and the Peninsula, and good rain in Ganjam.

The concluding column of the table shows the state of the seasonal fall. There is more or less deficiency in Burmah and East Bengal, excess in other parts of Bengal and over nearly the whole of the North-Western Provinces, and a rather large deficiency in the Punjab. Over the West Coast districts the variations are somewhat irregular, but all over the Central Provinces and in Kattiawar there is a deficiency. In Central India, Rajputana, and generally over Madras the rains have been good.

Province.	Division.	RAINFALL DATA FOR WEEK ENDING JULY 1st, 1889.			RAINFALL DATA FROM MAY 1st TO JULY 1st, 1889.		
		Average Actual Rainfall of Division,	Average Nor- mal Rainfall Division,	Excess or Deficit, in Inches.	Average Actual Rainfall of Season to date.	Average Nor- mal Rainfall, July 1st to July 1st.	Excess or De- ficit (Seasonal) Rainfall Expressed as a per- centage.
		Inches.	Inches.	Inches.	Inches.	Inches.	Per cent.
BURMAN	Tenasserim . . .	5.55	9.00	- 3.45	49.78	53.43	- 7
	Lower Burmah . . .	5.50	4.17	+ 1.33	22.62	27.24	- 17
	Central Burmah . . .	4.97	3.39	+ 0.68	17.10	22.11	- 23
	Upper Burmah . . .	1.31	?	?	13.81	7	?
	Arakan . . .	13.00	13.69	- 0.69	63.08	65.05	- 4
BENGAL AND ASSAM	Eastern Bengal . . .	5.13	3.85	+ 1.28	24.65	25.94	- 5
	Assam (Surma) . . .	8.41	3.78	+ 4.63	45.70	34.52	+ 33
	Do. (Brahmaputra) . . .	6.64	4.64	+ 2.00	31.03	24.75	+ 28
	Deltaic Bengal . . .	3.27	2.26	+ 1.01	15.63	14.21	+ 10
	Central Bengal . . .	4.93	2.34	+ 2.59	17.03	13.49	+ 31
	North Bengal . . .	7.26	5.11	+ 2.15	31.89	32.04	- 0
	Orissa . . .	3.89	3.44	+ 0.38	12.71	11.29	+ 13
	Chota Nagpur . . .	5.92	2.60	+ 3.32	12.72	10.29	+ 24
	Behar (South) . . .	5.04	2.50	+ 2.54	10.77	7.50	+ 43
	Do. (North) . . .	6.19	2.67	+ 3.52	15.08	10.37	+ 45
NORTH - WESTERN PROVINCES AND OUDH.	North - Western Provinces (East) . . .	4.24	1.94	+ 2.30	7.90	5.23	+ 51
	Oudh (South) . . .	1.53	2.10	- 0.57	6.70	5.42	+ 25
	Do. (North) . . .	2.50	2.35	+ 0.15	7.57	6.76	+ 12
	North - Western Provinces (Central) . . .	0.95	1.39	- 0.44	3.92	3.88	+ 1
	North - Western Provinces (West) . . .	1.42	1.36	+ 0.06	3.04	4.10	- 26
PUNJAB	North - Western Provinces (Submontane) . . .	2.77	2.61	+ 0.16	8.23	6.87	+ 20
	Punjab (South) . . .	0.13	0.82	- 0.69	2.14	2.45	- 13
	Do. (Central) . . .	0.06	1.80	- 1.74	1.24	4.01	- 69
	Do. (Submontane) . . .	0.87	2.02	- 1.15	2.70	4.19	- 36
	Do. (Utt Districts) . . .	6.52	3.19	+ 3.33	13.58	11.49	+ 18
	Do. (North-West) . . .	0.74	0.87	- 0.13	2.20	2.87	- 23
BOMBAY AND MALAR COAST DISTRICTS (MADRAS).	Do. (West) . . .	0.78	0.54	+ 0.44	1.72	1.34	+ 23
	Malabar . . .	6.32	7.23	- 0.91	43.33	44.63	- 3
	Madras (South Central) . . .	1.57	0.34	+ 1.23	0.15	47.31	+ 30
	Cong . . .	4.67	8.34	- 3.67	20.05	34.00	- 24
	Mysore . . .	0.96	0.07	+ 0.29	3.45	5.15	- 33
	Konkan . . .	14.29	7.21	+ 7.08	38.52	31.30	+ 23
	Bomlly Deccan . . .	1.31	1.35	- 0.04	6.03	7.97	- 17
CENTRAL PROVINCES AND BERAR.	Hyderabad (North) . . .	...	...	...	...	...	...
	Khandaish . . .	0.99	1.41	- 0.42	3.63	6.64	+ 45
	Berar . . .	1.86	2.41	- 0.55	5.34	7.79	- 29
	Central Provinces (West) . . .	2.77	4.36	- 1.59	7.27	8.64	- 18
	Ditto (Central) . . .	4.13	3.38	+ 0.75	9.05	10.00	- 4
BOMBAY (NORTH)	Ditto (East) . . .	3.46	3.01	- 0.15	6.08	11.62	- 24
	Guzerat . . .	3.68	2.49	+ 0.59	6.56	6.62	- 1
	Kattiawar . . .	0.75	1.33	- 0.58	2.03	3.89	- 48
RAJPUTANA AND CENTRAL INDIA.	Sind . . .	0.31	0.07	+ 0.24	0.40	0.29	+ 38
	Central India (East) . . .	2.41	1.66	+ 0.75	6.00	5.73	+ 16
	Rajputana (East), Central India (West) . . .	1.99	1.00	+ 0.99	5.38	3.69	+ 46
	Rajputana (West) . . .	0.56	0.50	+ 0.06	2.75	1.90	+ 45
MADRAS	East Coast (North) . . .	2.45	1.56	+ 0.89	7.62	7.41	+ 3
	Hyderabad (South) . . .	0.09	1.19	- 0.50	3.12	5.15	- 41
	Madras (Central) . . .	0.81	0.22	+ 0.59	3.09	4.95	- 9
	East Coast (Central) . . .	1.60	0.09	+ 0.10	4.32	4.29	+ 1
	Ditto (South) . . .	0.75	0.45	+ 0.30	3.42	3.49	+ 1
	Madras (South) . . .	0.55	0.14	+ 0.41	1.63	2.38	- 32

W. L. DALLAS,

Assistant Meteorological Reporter to the
Government of India.

E. C. BUCK,

Secretary to the Government of India.

K

GOVERNMENT OF INDIA.
REVENUE AND AGRICULTURAL DEPARTMENT.

**Weekly Report on the State of the Season and Prospects of
the Crops.**

Madras.—*For week ending 29th June.*—Rainfall good in Ganjam, Vizagapatam, Kistna, North Arcot, Nilgiris, and West Coast; fair in Godavari, Bellary, Kurnool, Chingleput, Coimbatore, and Salem; slight elsewhere. Crops generally good, but withering in parts of South Arcot and Tinnevelly; suffering from want of rain or water in Cuddapah, North Arcot, Trichinopoly, and Salem; dry crops blighted in Coimbatore. Water-supply insufficient in Cuddapah, Chingleput, North Arcot, Coimbatore, and Salem. Stock suffering badly, chiefly from rinderpest, in Malabar, Tinnevelly, and Kistna. Prices rising in Ganjam, Vizagapatam, and nine other districts; falling in five; stationary in others. 749 deaths from cholera in Ganjam. Labourers employed last day of week,—on Rushikulya works, 4,252; Gopalpur Canal, 1,769; Ghat Roads, 1,259. Average daily number on drinking-water tanks and wells, 4,765; on minor irrigation and other works, 3,657. Number on village relief on 22nd June, 24,880; fed in kitchens, 1,969. No reliable estimate of stocks, but apparently fair, except in Chinna Kimedi. General prospects favourable, and improving in Ganjam.

Bombay.—*For week ending 3rd July.*—Rain throughout Presidency Proper and Sind, but insufficient in many places. Sowing progressing in several districts, but retarded in parts of Broach, Nasik, Khandesh, Sholapur, Poona, Ahmednagar, Bijapur, and Belgaum for want of sufficient rain. Harvesting of *Rabi* crops in Karachi district completed. *Rati* blight in Mirpur Botoro; and sugarcane in Sákro in Karachi district attacked by disease. Locusts in one taluka of Karachi and one of Hyderabad; also passed through some villages of Ahmedabad. Mitho Indus embankment in Shikarpur breached by floods, which are spreading and endangering Larkana town.

Bengal.—*For week ending 2nd July.*—General and rather excessive rain throughout the Province during the week. A break is now much needed. Prospects so far are favourable. Cultivation is well forward, and all standing crops are making good progress. Paddy and *bhadoi* sowings are nearly complete, and transplanting of seedlings has begun. The excessive rain and rise of rivers have caused some damage to the lowland crops in Pubna, Julpaiguri, Dacca, Furreedpore, Muzaffarpur, and Chumparun. Prices continue high and almost stationary. The attendance on relief works in the distressed tracts of the Sonthal Pergunnahs is said to be gradually diminishing.

North-Western Provinces and Oudh.—*For week ending 3rd July.*—Cloudy weather has prevailed throughout the week, and average rain has fallen generally; though in Jhansi it has been inadequate, and in Moradabad more is urgently wanted. *Kharif* sowings continue. Markets are amply supplied, and prices remain steady, except in Partabgarh, Allahabad, and Moradabad, where they have an upward tendency. Agricultural stock in good condition.

Punjab.—*For week ending 3rd July.*—Rain has fallen in all districts, except Hissar and Peshawar. Prices falling in Shahpur; unsettled in Peshawar, and stationary elsewhere. *Rabi* harvesting over; *kharif* ploughings and sowings in progress. Rain anxiously expected in Hissar and Lahore. Standing crops are in good condition. Sugarcane and cotton crops promise well. Stock cattle are reported healthy. Fodder sufficient, except in Hissar district.

Central Provinces.—*For week ending 3rd July.*—Rain general and sufficient. There have been heavy showers, followed by clear weather, which have been very favourable for sowing. Rice being transplanted in Sambalpore. Prospects good. Much loss of cattle in Hoshangabad from want of fodder.

Burma.—*For week ending 29th June.*—The rainfall was heavy throughout Lower Burma, except in Thayetmyo. In Upper Burma, except in the Ruby Mines, Bhamo, Upper Chindwin, and Yamethin districts, the rainfall was light; but no reports of its being insufficient have yet been received. Cattle-disease is severe in Shwegen. The food-supply is sufficient. The price of paddy has risen 3 per cent. in Rangoon, 6 per cent. in Myadoung, and 11 per cent. in Pyinmana, and has fallen 11 per cent. in Prome, 4 per cent. in Thayetmyo, and 5 per cent. in Sagaing.

Assam.—*For week ending 3rd July.*—Weather seasonable. Sowing of late rice and reaping of summer rice continue. Blight on tea in Cachar. Prospects of other crops in general good.

Mysore and Coorg.—*For week ending 3rd July.*—Slight rain in the Civil and Military Station of Bangalore. Rainfall good in Kadur and Shimoga districts, and insufficient in the Mysore district. Crops good, except in Mysore district. Sowing operations completed in parts. No material change in prices.

Good rain in Coorg during the week. Crops in good condition.

Berar and Hyderabad.—*For week ending 3rd July.*—Average rainfall fair in Berar. Cotton sowing continues. Jowari, tur, and til sowings in progress. Prices steady. General condition of agricultural stock good. Fodder insufficient.

Rainfall fair in Hyderabad during week. Week's rain useful for sowing operations, but rainfall since commencement of monsoon insufficient. Scarcity of fodder still felt. Prices stationary.

Central India.—*For week ending 3rd July.*—Rain throughout Central India during the week; heaviest fall in Bhopawar Agency, but slight only in Gwalior, where more is needed. Prospects improved considerably in Western Malwa Agency. Prices of foodgrains generally steady in Bhopawar. Condition of pasturage is reported good.

Rajputana.—*For week ending 3rd July.*—Heavy rain at Abu, Erinpura, and Meywar; moderate elsewhere. Slight in Tonk and Ulwar. Agricultural operations progressing. Agricultural stock poor in Meywar and Bickaneer. Pasturage or fodder insufficient in Meywar and Ulwar. Prices rising in Kerowli and Bhurtpore.

Nepal.—*For week ending 27th June.*—Good rain. Weather fair. Prospects of crops good.

E. C. BUCK,
Secretary to the Government of India.

SUPPLEMENT TO THE GAZETTE OF INDIA, JULY 6, 1889.

GOVERNMENT OF INDIA.
PUBLIC WORKS DEPARTMENT.
RAILWAY TRAFFIC.

NO. X OF 1889-90.*

APPROXIMATE STATEMENT OF GROSS RECEIPTS AND EXPENSES OF INDIAN RAILWAYS.

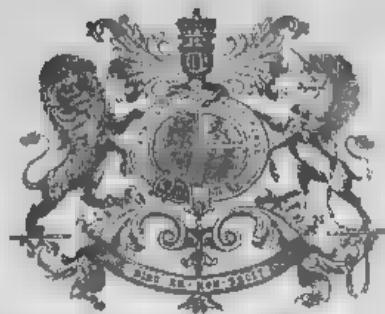
N.B.—As regards the figures in column Total Receipts from 1st April to date, audited figures have been used as far as possible.

Latest Return received.	RAILWAYS	Length mean per mile open	RECEIPTS FOR WEEK ENDING 9TH JUNE, 1889.		RECEIPTS FOR WEEK ENDING 8TH JUNE, 1889.		TOTAL RECEIPTS FROM 1ST APRIL TO 9TH JUNE, 1889.		TOTAL RECEIPTS FROM 1ST APRIL TO 8TH JUNE, 1889.		Total increase in 1889-90. Rs.	Total decrease in 1889-90. Rs.	
			Total.	Per mile open.	Total.	Per mile open.	Total.	Per mile open per week.	Total.	Per mile open per week.			
<i>State Lines worked by Companies.</i>													
2nd June, 1889	East Indian	1,514	Rs. 8,54,060	Rs. 565	Rs. 8,514	Rs. 512	Rs. 9,514,027	Rs. 620	Rs. 95,46,404	Rs. 637	Rs. 95,90,585	Rs. 34	
2nd ditto	Patio-Gya.	57	Rs. 1,01,12	Rs. 17	Rs. 57	Rs. 14	Rs. 1,01,12	Rs. 32	Rs. 90,036	Rs. 157	Rs. 137	Rs. 1,101	
2nd ditto	Bildarnagar-Ghasipur	12	Rs. 1,014	Rs. 80	Rs. 12	Rs. 28	Rs. 1,014	Rs. 77	Rs. 13,418	Rs. 112	Rs. 10,607	Rs. 341	
13th ditto	Rajputana-Malwa	2,844	Rs. 3,62,889	Rs. 265	Rs. 1,604	Rs. 265	Rs. 4,18,000	Rs. 25	Rs. 2,21,114	Rs. 244	Rs. 47,05,741	Rs. 287	
13th ditto	Hengal-Nagpur (a)	1,016	Rs. 2,01,707	Rs. 14	Rs. 205	Rs. 14	Rs. 2,01,707	Rs. 124	Rs. 4,23,000	Rs. 228	Rs. 5,38,636	Rs. 177	
2nd ditto	Southern Marathia (b)	670	Rs. 1,01	Rs. 95	Rs. 7	Rs. 100	Rs. 1,01	Rs. 100	Rs. 3,16,330	Rs. 98	Rs. 14,031	Rs. 116	
13th ditto	Ind. Mysore Section	149	Rs. 1,01,024	Rs. 72	Rs. 1,01,027	Rs. 72	Rs. 1,01,024	Rs. 72	Rs. 1,01,024	Rs. 71	Rs. 1,43,129	Rs. 65	
6th ditto	Indian Midland	213	(c) 27,613	Rs. 131	Rs. 37	(d) 0,01,036	Rs. 99	(e) 0,01,036	Rs. 110	(d) 0,01,036	Rs. 112	Rs. 43,558	Rs. 112
15th ditto	Villupuram-Dharmapuri-Venkavam (Nellore Branch)	83	Rs. 4,218	Rs. 51	Rs. 483	Rs. 59	Rs. 4,181	Rs. 59	Rs. 44,885	Rs. 35	Rs. 3,704	Rs. 112	
15th ditto	Bareilly-Pilibhit	30	Rs. 1,486	Rs. 41	Rs. 36	Rs. 36	Rs. 1,486	Rs. 42	Rs. 23,304	Rs. 65	Rs. 3,921	Rs. 112	
	TOTAL	4,753	13,73,294	289	5,372	16,29,817	303	1,54,42,425	325	1,07,45,139	310	1,302,714	Rs. 112
<i>State Lines worked by Government.</i>													
2nd June, 1889	North-Western (c)	2,471	Rs. 4,77,112	Rs. 198	Rs. 3,386	Rs. 5,80,630	Rs. 243	Rs. 47,58,330	Rs. 199	Rs. 53,70,453	Rs. 229	Rs. 3,00,543	Rs. 112
15th ditto	Gadh and Kolhapur	693	Rs. 1,30,874	Rs. 180	Rs. 92	Rs. 1,29,421	Rs. 230	Rs. 10,50,002	Rs. 234	Rs. 10,89,572	Rs. 112	Rs. 3,01,115	Rs. 112
15th ditto	Bengal Central	130	Rs. 10,366	Rs. 85	Rs. 125	Rs. 20,210	Rs. 102	Rs. 12,10,272	Rs. 91	Rs. 1,31,177	Rs. 110	Rs. 1,15,000	Rs. 112
15th ditto	Madras Coast	45	Rs. 13,956	Rs. 30	Rs. 45	Rs. 21,134	Rs. 474	Rs. 13,54,400	Rs. 252	Rs. 1,87,158	Rs. 42	Rs. 1,69,700	Rs. 112
2nd ditto	Eastern Bengal Railways	673	Rs. 1,47,217	Rs. 216	Rs. 73	Rs. 1,81,320	Rs. 269	Rs. 14,45,323	Rs. 215	Rs. 15,85,331	Rs. 236	Rs. 30,708	Rs. 112
2nd ditto	Malihali	47	Rs. 2,005	Rs. 76	Rs. 27	Rs. 1,736	Rs. 64	Rs. 10,33,20	Rs. 67	Rs. 10,53,5	Rs. 61	Rs. 1,804	Rs. 112
2nd ditto	Turhoot	259	Rs. 30,915	Rs. 151	Rs. 273	Rs. 46,875	Rs. 149	Rs. 3,94,500	Rs. 153	Rs. 20,17,289	Rs. 144	Rs. 274	Rs. 112
15th ditto	Lucknow-Sitapur	105	Rs. 6,323	Rs. 61	Rs. 105	Rs. 8,266	Rs. 70	Rs. 57,294	Rs. 55	Rs. 74,896	Rs. 71	Rs. 17,692	Rs. 112
15th ditto	Sitamar	31	Rs. 1,715	Rs. 53	Rs. 25	Rs. 1,122	Rs. 42	Rs. 10,181	Rs. 34	Rs. 11,056	Rs. 38	Rs. 605	Rs. 112
8th ditto	Jorhat	7	Rs. 115	Rs. 10	Rs. 7	Rs. 107	Rs. 23	Rs. 745	Rs. 10	Rs. 937	Rs. 16	Rs. 83	Rs. 112
15th ditto	Cherrapunji-Ganj-Burma	394	Rs. 6,649	Rs. 145	Rs. 553	Rs. 93,534	Rs. 170	Rs. 6,41,625	Rs. 155	Rs. 9,87,248	Rs. 179	Rs. 2,52,700	Rs. 112
	TOTAL	4,705	8,83,706	185	4,911	11,08,782	226	92,91,302	200	1,03,50,227	218	1,23,300	Rs. 112
<i>Lines worked by Guaranteed Companies.</i>													
15th June, 1889	Madras	840	Rs. 1,60,356	Rs. 101	Rs. 840	Rs. 1,81,325	Rs. 216	Rs. 16,13,658	Rs. 192	Rs. 18,20,323	Rs. 220	Rs. 2,07,125	Rs. 112
15th ditto	South Indian	654	Rs. 1,10,510	Rs. 109	Rs. 654	Rs. 1,23,321	Rs. 150	Rs. 10,51,121	Rs. 163	Rs. 11,06,394	Rs. 161	Rs. 4,470	Rs. 112
15th ditto	Great Indian Peninsula	1,504	Rs. 9,80,117	Rs. 52	Rs. 1,447	(g) 6,50,933	Rs. 42	Rs. 1,16,17,693	Rs. 777	(g) 88,16,804	Rs. 624	Rs. 27,90,699	Rs. 112
15th ditto	Bombay, Baroda and Central India (h)	491	Rs. 3,51,220	Rs. 519	Rs. 491	Rs. 3,06,000	Rs. 1	Rs. 31,74,273	Rs. 689	Rs. 32,71,549	Rs. 720	Rs. 97,250	Rs. 112
	TOTAL	3,674	14,04,219	431	3,402	12,03,229	371	1,75,24,015	508	1,51,33,067	432	2,418,348	Rs. 112
GRAND TOTAL (GUARANTEED AND STATE).													
GROSS ESTIMATED EXPENSES													
	NET RECEIPTS												
<i>Avised Companies.</i>													
2nd June, 1889	Tumkur-Kolar	4	Rs. 4,034	Rs. 211	Rs. 22	Rs. 7,239	Rs. 329	Rs. 65,375	Rs. 204	Rs. 66,233	Rs. 215	Rs. 838	Rs. 112
1st ditto	Odia Sambal	—	—	—	—	(i)	—	(j) 73,849	Rs. 105	(k) 80,575	Rs. 112	Rs. 12,740	Rs. 112
2nd ditto	Bengal and North Western	324	Rs. 5,757	Rs. 188	Rs. 376	Rs. 59,430	Rs. 138	Rs. 5,99,675	Rs. 159	Rs. 5,95,821	Rs. 161	Rs. 3,366	Rs. 2,854
15th ditto	Rehnikhand-Kuttiyan	17	Rs. 1,015	Rs. 105	Rs. 67	Rs. 7,017	Rs. 105	Rs. 75,065	Rs. 113	Rs. 63,376	Rs. 114	Rs. 7,201	Rs. 112
	TOTAL	493	Rs. 74,107	143	495	Rs. 73,036	158	Rs. 14,544	150	Rs. 8,32,995	165	Rs. 10,451	Rs. 112
<i>Native States.</i>													
15th June, 1889	His Highness the Nizam's Guaranteed Company	277	Rs. 26,732	Rs. 29	Rs. 354	Rs. 40,157	Rs. 113	Rs. 3,05,732	Rs. 110	Rs. 4,04,878	Rs. 116	Rs. 90,146	Rs. 112
15th ditto	His Highness the Gaekwar's Viceroy's	59	Rs. 3,143	Rs. 53	Rs. 59	Rs. 3,620	Rs. 48	Rs. 36,962	Rs. 63	Rs. 30,710	Rs. 53	Rs. 6,252	Rs. 112
2nd ditto	Mysore-Mysore-Mysore	21	Rs. 637	Rs. 41	Rs. 27	Rs. 1,100	Rs. 40	Rs. 11,884	Rs. 57	Rs. 12,353	Rs. 47	Rs. 699	Rs. 112
15th ditto	Bijapur-Kadaganahalli-Jumagadai-Purbandar	193	Rs. 4,472	Rs. 101	Rs. 260	Rs. 32,400	Rs. 125	Rs. 6,924	Rs. 137	Rs. 3,61,063	Rs. 141	Rs. 97,130	Rs. 112
15th ditto	Moyna-Juddipura	93	Rs. 3,529	Rs. 52	Rs. 68	Rs. 5,147	Rs. 80	Rs. 5,18,30	Rs. 76	Rs. 52,001	Rs. 75	Rs. 1,072	Rs. 112
15th ditto	Juddipura	124	Rs. 7,475	Rs. 59	Rs. 124	Rs. 2,010	Rs. 60	Rs. 78,813	Rs. 104	Rs. 73,103	Rs. 101	Rs. 5,412	Rs. 112
	TOTAL	742	Rs. 61,028	82	Rs. 92	Rs. 90,124	101	Rs. 50,147	101	Rs. 36,742	106	Rs. 3,80,593	Rs. 112

(a) Includes the Kurnool-Guntakal Branch.
 (b) Includes the Hedayat system State Railway.
 (c) Includes the Sindhi State Railway.
 (d) Includes the Sindhi and Wazir-Ul-Hassan State Railways.
 (e) Includes the Amritsar-Patiala and Rajputana-Bundinda State Railways.
 (f) Includes the Dholi-Mannad, Khangau, and Amritsi State Railways.
 (g) Return not received.
 (h) Includes the Puri Line.
 (i) Total receipts from 1st April to 2nd June, 1888.
 (j) Total receipts from 1st April to 2nd June, 1889.

(k) Includes the Dhondi-Mannad, Khangau, and Amritsi State Railways.
 (l) Includes the Puri Line.
 (m) Return not received.
 (n) Total receipts from 1st April to 2nd June, 1888.
 (o) Total receipts from 1st April to 2nd June, 1889.

M. C. BRACKENBURY, Major, R.E.,
Under Secretary,



SUPPLEMENT TO
The Gazette of India.

No. 28.]

CALCUTTA, SATURDAY, JULY 13, 1889.

OFFICIAL PAPERS.

A SUPPLEMENT to the GAZETTE OF INDIA will be published from time to time, containing such Official Papers and information as the Government of India may deem to be of interest to the Public, and such as may usefully be made known. The Debates of the Legislative Council of His Excellency the Governor General will in future be published in PART VI of the GAZETTE.

Non-Subscribers to the GAZETTE may receive the SUPPLEMENT separately on a payment of five Rupees per annum if delivered in Calcutta, or eight Rupees if sent by Post. The SUPPLEMENT and PART VI of the GAZETTE can also be subscribed for separately on a payment of Rupees six per annum if delivered in Calcutta or Rupees nine if sent by Post.

No Official Orders or Notifications, the Publication of which in the GAZETTE OF INDIA is required by Law, or which it has been customary to publish in the CALCUTTA GAZETTE, will be included in the SUPPLEMENT. For such Orders and Notifications the body of the GAZETTE must be looked to.

GOVERNMENT OF INDIA,
DEPARTMENT OF FINANCE AND COMMERCE.

RETAIL PRICES FOR THE 2nd HALF OF MAY 1880.

QUANTITIES PER RUMPE IN SEERS OR TOOLS.

Districts	WHEAT.	BARLEY.	RICE, MURT. MURT.	JOWAR OR CHOLAM (Sorghum variegata).	MAMUA OR RAGI (Ele- o-sorus cere- alis).	GRAM, CHENNA, CHOLA, KADALAY OR SUNGAYA (Cicer arietinum).	MAIZE (Zea Mays).	ABHAR OR THUR CADJAN PELA (Caryopsis stachys).	Firewood.			SALT.		
									S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.
Burma—														
Tenasserim—														
Mergui . . . . .	..	..	..	9 14	10 4	10 14	11 5	..	..	..	..	..	19 7	19 7
Tavoy . . . . .	..	..	..	12 6	11 12	14 13	14 13	..	..	..	..	..	24 2	24 2
Moulmein and Amherst	7 14	3 15	..	10 8	10 8	12 2	12 2	..	..	..	..	..	20 3	20 3
Pegu (delir.)—														
Rangoon . . . . .	..	..	..	10 4	9 7	10 10	12 3	..	..	..	..	..	38 7	38 7
Thongwa . . . . .	..	..	..	10 6	12 6	11 2	13 2	..	..	..	..	..	16 16	16 16
Bassein . . . . .	..	..	..	10 11	10 11	12 13	13 12	..	..	..	..	..	18 11	18 11
Swaygau . . . . .	..	..	..	10 13	11 0	13 14	14 0	..	..	..	..	..	14 3	14 3
Henzawadi . . . . .	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Prone . . . . .	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Toungoo . . . . .	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Thayetmyo . . . . .	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Upper Burma—														
Myandalay . . . . .	..	..	..	10 10	10 12	..	..	..	..	..	..	..	16 0	16 0
Arapa—														
Sandway . . . . .	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Kyauk-pyu . . . . .	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Akyab . . . . .	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Prakasapura—														
Goalpara	16 0	16 0	..	..	..	14 14	14 14	15 12	15 12	..	..	..	9 4	9 4
Kamrup . . . . .	..	..	..	..	..	12 0	12 0	13 8	13 8	..	..	..	9 8	9 8
Cachar	7 12	7 8	..	..	..	5 11	6 0	8 13	10 0	..	..	..	9 9	9 9
Khasi and Jaintia Hills . . . . .	..	..	..	..	..	6 0	6 0	15 0	17 0	..	..	..	9 6	9 6
Garo Hills . . . . .	..	..	..	..	..	..	..	..	..	..	..	..	12 0	12 0
Lakhipur . . . . .	..	..	..	..	..	..	..	..	..	..	..	..	7 8	7 8
Assam—														
Sylhet . . . . .	..	..	..	..	..	..	..	..	..	..	..	..	10 0	10 0
Darrang . . . . .	..	..	..	..	..	..	..	..	..	..	..	..	15 0	15 0
Rongong . . . . .	..	..	..	..	..	..	..	..	..	..	..	..	12 0	12 0
Sivasagar . . . . .	..	..	..	..	..	..	..	..	..	..	..	..	20 0	20 0
Lakhipur . . . . .	..	..	..	..	..	..	..	..	..	..	..	..	16 0	16 0

RETAIL PRICES FOR THE 2nd HALF OF MAY 1889—continued.

QUANTITIES PER RUPEE IN SERS OF 80 TOLAS.

SUPPLEMENT TO THE GAZETTE OF INDIA, JULY 13, 1889.

Products		WHEAT.	BARLEY.	RICE, SAWI, SOWJI.	RICE, COMMON.	JOWAR OR CHOLIUM (Sorghum varia).	BAJRA OR CHINNU (Pennisetum spinosissimum).	MARUAK RAGI (Elae- cine cor- culata).	GRAM, CHURNA, CHOLEA, OR SUNAGA (Cicer aromaticum).	MAIZE (Zea Mays).	AKHAR OR THUR CADIAN POKA (Cajanus indicus).			GREENWOOD.			SATT.		
											S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	
Bengal—continued.																			
Becher, South—		16.4	16.4	21.0	21.0	10.5	10.5	10.5	10.5	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	
Monghyr		15.8	16.6	21.0	23.0	10.3	10.3	10.3	10.3	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	
Gya		15.2	15.8	20.0	22.0	10.9	10.9	10.9	10.9	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	
Purna		15.0	14.8	20.0	20.0	8.6	8.6	8.6	8.6	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	
Shahabad		14.0	14.8	20.0	20.0	8.6	8.6	8.6	8.6	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	
Bihar, North—		16.0	20.0	10.0	10.0	13.0	13.0	13.0	13.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	
Pooreah		15.7	15.2	12.0	18.15	10.2	13.9	12.0	13.4	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	
Darbhanga		14.4	13.11	18.4	19.6	10.41	9.2	13.4	12.9	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	
Moraiarpur		13.9	13.8	13.8	13.8	10.0	9.0	9.0	9.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Samra		13.3	13.0	13.8	13.8	10.8	10.8	10.8	10.8	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Champaran		13.0	11.8	13.0	13.0	10.8	10.8	10.8	10.8	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Bihar, South—		14.0	14.0	14.0	14.0	18.0	18.0	17.2	17.2	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	
Bhagalpur		14.16	14.17	14.17	14.17	29.0	29.0	8.11	8.11	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	
Barhinga		15.7	15.7	15.7	15.7	18.8	18.8	18.8	18.8	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	
Muzaffarpur		13.9	13.9	13.9	13.9	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Samra		13.3	13.3	13.3	13.3	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Champaran		13.0	11.8	13.0	13.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
N-W. Provinces—																			
Eastern—																			
Mirzapur		14.0	14.0	14.0	14.0	18.0	18.0	17.0	17.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	
Ranmras		14.16	14.17	14.17	14.17	23.0	23.0	9.0	9.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Gazipur		15.7	15.7	15.7	15.7	20.0	20.0	6.7	6.7	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Jalunpur		13.9	13.9	13.9	13.9	22.0	22.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Allahabad		13.8	13.8	13.8	13.8	22.0	22.0	2.0	2.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Central—																			
Raibig		15.4	15.8	21.0	21.0	8.0	8.0	8.0	8.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Fatehpur		16.0	17.0	17.0	17.0	23.0	23.0	9.0	9.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Hamirpur		17.12	17.17	17.17	17.17	22.0	22.0	9.0	9.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Jalaun		16.0	17.0	17.0	17.0	22.0	22.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Cawnpore		17.0	17.0	17.0	17.0	22.0	22.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Eiawali		16.4	16.4	16.4	16.4	22.0	22.0	6.5	6.5	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Farukhabad		16.12	16.12	16.12	16.12	22.0	22.0	6.5	6.5	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Matupuri		18.4	18.4	18.4	18.4	25.4	25.4	4.8	4.8	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	
Eiak		17.12	17.12	17.12	17.12	24.0	24.0	7.8	7.8	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	
Maeut		17.0	17.0	17.0	17.0	24.0	24.0	7.8	7.8	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	
Western—																			
Lahitpur		16.0	16.0	21.0	21.0	8.21	8.21	9.0	9.0	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	
Jhansi		16.1	17.1	17.1	17.1	21.0	21.0	9.0	9.0	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	
Agra		16.0	15.5	15.5	15.5	22.0	22.0	7.8	7.8	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	
Motra		15.0	15.0	15.0	15.0	24.0	24.0	6.0	6.0	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	
Aligarh		16.12	16.12	16.12	16.12	25.0	25.0	6.0	6.0	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	
Dilandshahr		17.0	17.0	17.0	17.0	26.0	26.0	6.0	6.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	
Maeut		17.0	17.0	17.0	17.0	26.0	26.0	6.0	6.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	
Sub-montane—																			
Balita		14.4	15.0	19.0	19.0	20.0	20.0	8.0	8.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	
Asamgarh		13.4	13.4	13.4	13.4	20.0	20.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Gorakhpur		13.8	13.8	13.8	13.8	20.0	20.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Basti		16.0	16.0	16.0	16.0	23.0	23.0	9.0	9.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Sikhdihampur		17.8	17.8	17.8	17.8	25.0	25.0	8.0	8.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	
Budau		17.12	17.12	17.12	17.12	28.0	28.0	8.0	8.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	
Philib		15.0	15.0	15.0	15.0	25.0	25.0	8.0	8.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	

* Six punds per bundle.

הנתקה בראבּוֹן

In sub-divisions retail prices of salt per rupee are :—

*2 At Singapore 60/- per kg.
*3 At Keltie's 60/- per kg.

At Newaria retai three of salt 8 annas per rupee.
In subdivisions retail prices as per rupees 244 :—
Roxas 10 annas, **Sassaram** 10 annas, and **Bhabua** 9½ annas.

RETAIL PRICES FOR THE 2nd HALF OF MAY 1889—continued.

QUANTITIES PER RUPEE IN SERS OF 80 TOLAS.

प्राचीन भारतीय विज्ञान एवं तकनीक

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Not respondents

Not sold.

SUPPLEMENT TO THE GAZETTE OF INDIA, JULY 13, 1889.

RETAIL PRICES FOR THE 2nd AND HALF OF MAY 1889—continued.

QUANTITIES PER RUPEE IN SEERS OF 80 TULAS.

Districts.	WHEAT.	BARLEY.	RICE, BENT SOFT.	RICE, COMMON.	JOWAR OR CHOLUM (Sorghum vulgare).	BAIRI OR CUMRU (Pennisetum typhoides).	MANGNI OR KARUN, ITALIAN MILLET (Setaria italica).	MAJER (Zea Mays).	ARRAK OR THUR.			CADIAM PIA (Cyperus indicus).			SALT.		
									S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	S. Ch.	
Madras—																	
Malabar Coast—																	
Malabar.	8 10	8 10	11 13	11 13	12 10	12 10	12 10	12 10	11 13	11 13	11 13	11 13	11 13	11 13	11 13	11 13	
S. Canara	8 2	8 2	11 14	11 14	12 13	12 13	12 13	12 13	11 13	11 13	11 13	11 13	11 13	11 13	11 13	11 13	
South central—																	
Cochin.	11 6	12 5	11 10	12 10	13 10	13 10	13 10	13 10	12 11	12 11	12 11	12 11	12 11	12 11	12 11	12 11	
Nilgiris.	9 14	9 14	10 13	10 13	11 3	11 3	11 3	11 3	10 13	10 13	10 13	10 13	10 13	10 13	10 13	10 13	
Salem.	10 3	10 3	11 13	11 13	13 13	13 13	13 13	13 13	13 14	13 14	13 14	13 14	13 14	13 14	13 14	13 14	
Central—																	
Bellary.	13 14	13 14	11 12	12 13	13 14	13 14	13 14	13 14	12 13	12 13	12 13	12 13	12 13	12 13	12 13	12 13	
Anantapur.	11 8	11 8	11 12	11 12	11 12	11 12	11 12	11 12	11 12	11 12	11 12	11 12	11 12	11 12	11 12	11 12	
Cuddapah.	11 13	12 8	11 12	11 12	11 12	11 12	11 12	11 12	11 12	11 12	11 12	11 12	11 12	11 12	11 12	11 12	
Kurnool.	11 6	11 6	10 11	10 11	11 6	11 6	11 6	11 6	11 13	11 13	11 13	11 13	11 13	11 13	11 13	11 13	
East Coast, south—																	
Ganjam.	9 13	9 8	11 12	11 12	10 11	10 11	10 11	10 11	10 11	10 11	10 11	10 11	10 11	10 11	10 11	10 11	
Virapatnam.	13 0	13 0	13 11	13 11	13 14	13 14	13 14	13 14	13 14	13 14	13 14	13 14	13 14	13 14	13 14	13 14	
Godavari.	11 11	11 11	11 11	11 11	11 11	11 11	11 11	11 11	11 11	11 11	11 11	11 11	11 11	11 11	11 11	11 11	
East Coast, central—																	
Kistna.	20 6	19 6	19 14	19 14	19 14	19 14	19 14	19 14	19 14	19 14	19 14	19 14	19 14	19 14	19 14	19 14	
Nellore.	9 14	9 14	11 6	11 6	11 6	11 6	11 6	11 6	11 6	11 6	11 6	11 6	11 6	11 6	11 6	11 6	
East Coast, south—																	
Madras.	10 10	10 10	11 10	11 10	11 10	11 10	11 10	11 10	11 10	11 10	11 10	11 10	11 10	11 10	11 10	11 10	
Chingleput.	9 6	9 6	11 11	11 11	12 11	12 11	12 11	12 11	13 2	13 2	13 2	13 2	13 2	13 2	13 2	13 2	
N. Arcot.	8 10	8 10	11 11	11 11	12 11	12 11	12 11	12 11	13 3	13 3	13 3	13 3	13 3	13 3	13 3	13 3	
S. Arcot.	8 13	8 2	11 11	11 11	12 11	12 11	12 11	12 11	13 0	13 0	13 0	13 0	13 0	13 0	13 0	13 0	
Trichinopoly.	8 10	8 14	11 11	11 11	12 11	12 11	12 11	12 11	12 11	12 11	12 11	12 11	12 11	12 11	12 11	12 11	
Southern—																	
Tirunelveli.	10 11	10 11	10 2	10 2	10 2	10 2	10 2	10 2	11 8	11 8	11 8	11 8	11 8	11 8	11 8	11 8	
Madura.	10 2	10 2	11 6	11 6	11 6	11 6	11 6	11 6	11 14	11 14	11 14	11 14	11 14	11 14	11 14	11 14	
Mysore—																	
Mysore.	10 0	10 0	10 0	10 0	10 0	10 0	10 0	10 0	9 12	9 12	9 12	9 12	9 12	9 12	9 12	9 12	
Bangalore.	11 0	10 8	11 0	10 8	11 0	10 8	11 0	10 8	9 6	9 6	9 6	9 6	9 6	9 6	9 6	9 6	
Kolar.	12 0	11 0	11 0	11 0	11 0	11 0	11 0	11 0	10 0	10 0	10 0	10 0	10 0	10 0	10 0	10 0	
Tumkur.	11 0	11 0	11 0	11 0	11 0	11 0	11 0	11 0	10 0	10 0	10 0	10 0	10 0	10 0	10 0	10 0	
Hassan.	10 0	10 0	11 0	11 0	11 0	11 0	11 0	11 0	10 0	10 0	10 0	10 0	10 0	10 0	10 0	10 0	
Kadur.	10 6	12 10	10 6	12 10	10 6	12 10	10 6	12 10	10 8	10 8	10 8	10 8	10 8	10 8	10 8	10 8	
Shimoga.	10 6	12 10	10 6	12 10	10 6	12 10	10 6	12 10	10 8	10 8	10 8	10 8	10 8	10 8	10 8	10 8	
Chitaldrug.	13 0	13 0	15 0	15 0	15 0	15 0	15 0	15 0	13 0	13 0	13 0	13 0	13 0	13 0	13 0	13 0	
Coorg—																	
Coorg.	9 0	9 0	8 0	8 0	8 0	8 0	8 0	8 0	10 8	10 8	10 8	10 8	10 8	10 8	10 8	10 8	
Aden.	8 0	8 0	8 0	8 0	8 0	8 0	8 0	8 0	10 3	10 3	10 3	10 3	10 3	10 3	10 3	10 3	

• Not sold.

GOVERNMENT OF INDIA.
REVENUE AND AGRICULTURAL DEPARTMENT.

**Weather Review of India for the week ending at 8 a.m. on
Monday, July 8th, 1889.**

There has been no important change of weather during the past week. Normal monsoon conditions have prevailed throughout the period, uninterrupted either by any considerable break in the rains or by any considerable storm. In the Western Desert, Khandaish, part of the Bombay Deccan, and Madras there has been less rain than usual; but with these exceptions the rainfall, though nowhere very heavy, has been steady and sufficient.

The Chart of the 2nd showed the ordinary monsoon distribution over the greater part of the country, but in Northern India there were some irregularities. In the first place, a small depression lay over Northern Bengal; in the second, the shallow depression which ordinarily exists over the Gangetic plain was absent, and pressure decreased gradually but steadily right up to the foot of the hills. In consequence, the south-easterly winds which usually prevailed over Northern India were not shown, and the winds over the Punjab and North-Western Provinces were apparently part of the West Coast current. On the 3rd the Chart showed that the depression over Bengal had begun to move west-south-westward and at the same time to fill up. There existed on this day a low pressure area over Western Bengal and the east of the North-Western and Central Provinces, and a second over the west of the Punjab, with an intervening region covering the North-Western Provinces, the east of the Punjab, and Rajputana of very uniform pressure. Over the Peninsula gradients were also slight for the time of year. The monsoon currents were consequently light or moderate generally, and on the West Coast there was much variability in the wind direction. By the morning of the 4th the Bengal depression had reached the centre of the Central Provinces. A well marked though feeble cyclonic circulation existed around it, and hence easterly and south-easterly winds had appeared in Upper India. The wind was still very variable on the West Coast, but elsewhere normal monsoon directions prevailed. By the 5th the depression had almost filled up, though there were traces of the centre between the stations of Jeypore and Indore and Neemuch and Jhansi. Except on the West Coast, the normal monsoon circulation existed. On the 6th the depression had entirely disappeared, but otherwise there was no change. On the 7th a rapid fall of the barometer was reported from North-Western India, while pressure rose in the south. Hence gradients became steeper and the wind stronger. The Chart of the 8th showed that the fall in the North-West continued, and the barometric difference between the south and north of India became again about normal. At the same time the wind became westerly and south-westerly over the Peninsula.

Temperature.—Very small variations of temperature from the mean are again reported this week. The conditions which maintained the uniform temperature of last week have again been effective in preventing any large changes, and the variations from the normal, which are shown in the table given below, are everywhere less than $1\frac{1}{2}^{\circ}$. Larger variations than the above occurred on some days in particular districts. For instance, owing to the rather heavy rainfall in the Indus Valley at the end of last week, the mean temperature of Guzerat and Sind was low on the 2nd, while, owing to moderately heavy rain in Upper India at the close of the present week, the mean temperature of the North-Western Provinces and the Punjab was low on the 7th and 8th.

During the first two days of the week the maxima were high all over North-Western India, exceeding 100° at all stations; but on the 4th a rapid fall occurred over Upper India (except the Indus Valley), and the maxima from that day till the close of the week were generally considerably below the normal.

The following table shows the excess or defect of the mean average temperatures of the different Provinces from the normal, both for the present and for the preceding week :

PROVINCES.	Difference of Mean Temperature of Last Week from Normal.	Difference of Mean Temperature of Present Week from Normal.
Burmah	0°	+ 1.2°
Bengal	- 1.3°	- 0.2°
North-Western Provinces	- 2.5°	- 0.8°
Punjab	+ 0.6°	- 0.5°
Bombay	- 0.3°	+ 1.0°
Central Provinces and Berar	+ 0.5°	+ 1.4°
Guzerat and Central India	- 1.1°	- 0.7°
Sind and Rajputana	- 1.4°	- 1.1°
Madras	- 0.1°	+ 0.1°

This table shows that there has been a slight excess of temperature in Burmah, Bombay, the Central Provinces, and Madras, and a slight deficiency elsewhere.

Rain.—In North-Western India and in Madras the rainfall of the week has again been rather scattered than general, and in Sind and the west of the Punjab there has been none of any consequence; but in all other parts of India rain has been general and has fallen in most districts on every day of the week.

The following is a brief description of the daily distribution :

On the 2nd there was no rain over the south and west of the Punjab, Upper Sind, Central India, the west of the Central Provinces, the Bombay Deccan, or the Carnatic. Elsewhere rain was general, and in parts of Bengal heavy. On the 3rd a similar distribution obtained, but the amounts had decreased somewhat in Bengal. On the 4th there was rather more rain in the Punjab, and a fairly general fall over Central India, Khandaish, and the Bombay Deccan, and larger amounts on the West Coast. On the 5th rain ceased again in Khandaish, Berar, the west of the Central Provinces, and decreased in amount on the West Coast; but elsewhere there was no change. The Chart of the 6th showed larger amounts again on the West Coast and general rain in all parts of the country, except the south of the Punjab and the Western Desert. On the 7th rain was still heavier on the West Coast, but there was no other change; and the Chart of the 8th showed rain in all places, except parts of Rajputana and the Indus Valley.

The table at the close of the Summary shows that out of the 51 divisions into which India is divided, 23 divisions had more rain during the week than is usually received, and that 24 received less than the average; 1 district had exactly the normal; and from the other 3 districts there was no information or no average. In the great majority of districts the variations are small and often unimportant.

In Burmah all the divisions, except Arakan, had less rain than usual; and the same is true of all districts in Bengal, except Deltaic Bengal, North Bengal, and Chota Nagpur, where there was an excess. The whole of Upper India, except the districts of Oudh north, Punjab central, and Punjab west, had exceedingly good rain, the excess in some districts being considerable. Malabar had only two-thirds of its normal amount; but Madras, south central, and Coorg had heavy rain. The Konkan has more than the average rain; but behind the Ghâts in Mysore and the Bombay Deccan, as well as northward into Khandaish, Berar, and the west of the Central Provinces, there was a rather large deficiency. The east of the Central Provinces and Central India had good rains, while Guzerat had a considerable and Sind a trifling deficiency. The East Coast districts exhibit a slight excess or a trifling deficiency.

The concluding column of the table shows the state of the seasonal rainfall. Burmah and East Bengal are below the average; but over the rest of Bengal, as well as over by far the greater part of Northern India, the rainfall has been exceedingly good. The only important exception is the Punjab central, where only about half the normal amount has fallen. The West Coast districts have had fair rain; but Mysore and the whole of the districts comprising Khandaish, Berar, and the west of the Central Provinces have had short rain. In Central India, Guzerat, and Sind the rainfall has been about the normal; but in Kattiawar it has been deficient. In Madras the changes are irregular and on the whole not large.

PROVINCE.	DIVISION.	RAINFALL DATA FOR WEEK ENDING JULY 8TH, 1889.			RAINFALL DATA FROM MAY 13TH TO JULY 8TH, 1889.		
		Average Actual Rainfall of Division,	Average Nor- mal Rainfall of Division.	Excess or Deficit, in Inches.	Average Actual Rainfall of Season to date.	Average Nor- mal Rainfall, May 13th to July 8th.	Excess or De- ficit of (Seasonal) Rainfall ex- pressed as a per- centage.
		Inches.	Inches.	Inches.	Inches.	Inches.	Per cent.
BURMAH	Tenasserim	2'94	9'11	- 6'17	52'72	62'53	- 16
	Lower Burmah	2'84	5'08	- 2'24	25'46	32'32	- 21
	Central Burmah	1'72	3'89	- 2'17	18'82	25'99	- 28
	Upper Burmah	2'06	?	?	17'62	?	7
	Arakan	11'72	9'53	+ 2'19	69'00	75'48	- 9
BENGAL AND ASSAM	Eastern Bengal	2'83	4'45	- 1'62	27'48	30'25	- 9
	Assam (Surma)	3'54	4'65	- 1'11	40'34	39'17	+ 26
	Do. (Brahmaputra)	3'68	4'84	- 1'16	35'09	28'97	+ 23
	Deltaic Bengal	3'13	2'81	+ 0'32	18'81	17'03	+ 10
	Central Bengal	2'06	3'16	- 1'10	18'86	16'65	+ 13
	North Bengal	7'09	6'35	+ 0'74	38'98	38'38	+ 2
	Orissa	1'12	2'33	- 1'21	13'83	13'62	+ 2
	Chota Nagpur	4'28	2'80	+ 1'48	16'50	12'57	+ 31
	Behar (South)	2'41	2'62	- 0'21	13'18	10'18	+ 29
	Do. (North)	3'36	3'77	- 0'41	18'44	14'15	+ 30
NORTH - WESTERN PROVINCES AND OUDH.	North - Western Provinces	3'19	2'25	+ 0'94	11'08	7'48	+ 48
	Oudh (South)	2'38	2'32	+ 0'06	9'17	7'74	+ 18
	Do. (North)	2'00	3'30	- 1'30	9'53	9'94	- 4
	North - Western Provinces	2'73	1'75	+ 0'98	6'65	5'63	+ 18
	North - Western Provinces	2'21	2'13	+ 0'08	5'25	6'00	- 13
PUNJAB	North - Western Provinces (Submontane).	5'39	3'57	+ 1'82	13'62	10'37	+ 31
	Punjab (South)	1'75	1'05	+ 0'70	3'89	3'50	+ 11
	Do. (Central)	1'90	2'17	- 0'27	3'14	6'18	- 49
	Do. (Submontane)	3'75	2'40	+ 1'35	6'45	6'59	- 2
	Do. (Hill Districts)	8'50	6'83	+ 1'73	22'14	18'32	+ 21
	Do. (North-West)	2'90	1'91	+ 0'69	5'11	4'08	+ 25
BOMBAY AND MALABAR COAST DISTRICTS (MADRAS).	Do. (West)	0'30	0'40	- 0'10	2'02	1'74	+ 16
	Malabar	5'04	7'62	- 2'58	48'37	52'25	- 7
	Madras (South Central)	1'60	0'57	+ 1'03	7'75	5'30	+ 46
	Coorg	5'04	1'06	+ 3'98	31'09	35'12	- 11
	Mysore	0'65	0'84	- 0'19	4'10	0'39	- 36
	Konkan	8'25	7'54	+ 0'71	46'77	38'84	+ 20
	Bombay Deccan	1'10	1'53	- 0'48	7'73	9'55	- 19
	Hyderabad (North)	...	...	...	...	...	...
CENTRAL PROVINCES AND BERRAR.	Khandeish	0'74	1'07	- 0'33	4'38	7'71	- 43
	Berar	1'70	2'10	- 0'40	7'24	9'88	- 27
	Central Provinces (West)	1'62	2'45	- 0'83	8'67	11'24	- 23
	Ditto (Central)	4'05	3'73	+ 0'32	14'14	14'08	0
BOMBAY (NORTH)	Ditto (East)	3'16	2'63	+ 0'53	12'62	14'25	- 11
	Guzerat	2'27	3'36	- 1'09	8'83	9'95	- 15
	Kattiawar	2'46	2'29	+ 0'16	4'48	7'40	- 40
RAJPUTANA AND CENTRAL INDIA.	Sind	0'11	0'16	- 0'05	0'51	0'45	+ 13
	Central India (East)	2'72	2'58	+ 0'14	9'41	8'72	+ 8
	Rajputana (East), Central India (West).	2'60	1'83	+ 0'77	7'48	5'52	+ 36
	Rajputana (West)	...	...	...	...	...	...
MADRAS	East Coast (North)	2'10	1'17	+ 0'93	9'63	8'57	+ 12
	Hyderabad (South)	0'83	1'00	- 0'17	3'95	6'15	- 36
	Madras (Central)	0'70	0'68	+ 0'02	4'39	4'73	- 7
	East Coast (Central)	0'79	0'79	0	5'11	5'08	+ 1
	Ditto (South)	0'41	0'53	- 0'12	3'83	3'93	- 3
	Madras (South)	0'10	0'34	- 0'24	1'73	2'72	- 36

W. L. DALLAS,

Assistant Meteorological Reporter to the
Government of India.

E. C. BUCK,

Secretary to the Government of India.

SIMLA, 11th July, 1889.

GOVERNMENT OF INDIA.

REVENUE AND AGRICULTURAL DEPARTMENT.

Weekly Report on the State of the Season and Prospects of
the Crops.

Madras.—*For week ending 6th July.*—Rainfall good in Ganjam, Vizagapatam, Godavari, Kistna, Bellary, Nilgiris, Salem, and West Coast; slight in Madras and Chingleput, and fair elsewhere. Crops generally good; but withering in parts of Cuddapah, South Arcot, and Tinnevelly, and suffering from want of rain or water in North Arcot, Trichinopoly, Coimbatore, and Salem. Crops damaged by excessive moisture in Vizagapatam and blighted by insects in Coimbatore. Water-supply insufficient in Chingleput and Salem. Stock suffering badly from disease in Tanjore, Kistna, Tinnevelly, and Malabar. Prices rising in eight districts, falling in six, and stationary in others. Cholera severe in the three northern districts, but abating in Ganjam. Labourers employed last day of week in Ganjam,—on Rushikulya works, 4,118; Gopalpur Canal, 1,334; Ghat Roads, 1,879. Average daily number on drinking-water tanks and wells, 5,039; on minor irrigation and other works, 3,055: decrease due to agricultural operations and partly to floods in Gopalpur Canal. Number on village relief on 29th June, 27,163; fed in kitchens, 2,907. No reliable estimate of stocks of food-grains in Ganjam. Imports during week by sea and land 1,208 tons. General prospects favourable; continue to improve in Ganjam.

Bombay.—*For week ending 10th July.*—Rain throughout the Presidency Proper and Sind, but deficient in parts of Guzerat, Deccan, and Southern Mahratta Country. Sowing progressing in several districts, but retarded for want of sufficient rain in parts of Khandesh, Nasik, Poona, Ahmednagar, Satara, Bijapur, and Dharwar. Standing crops good in Sholapur, Belgaum, and Kanara,—damaged by caterpillars in four talukas of Kaira, and suffering for want of moisture in three talukas of Bijapur. Transplantation progressing in Surat, Thana, Kolaba, Ratnagiri, and Kanara. Fodder scarce in parts of Poona, Ahmednagar, Dharwar, and Kathiawar. Water scarce in parts of Ahmednagar and Dharwar. Prices rising in parts of Khandesh and Nasik.

Bengal.—*For week ending 9th July.*—Ordinary monsoon weather prevails throughout the Province, and ample rain has fallen in all districts, except Balasore. A partial break in the rains appears to have set in and will be beneficial to the crops. The excessive rain has caused damage to the crops on low lands in places in the Rajshahi and Dacca divisions, the damage being rather considerable in the south of Rungpore. Sowing of paddy and *bhadoi* crops nearly completed, and transplanting of seedlings has begun. Prospects of early rice, jute, and sugarcane are promising. Indigo manufacture has begun, and the produce is expected to be fair, except in Midnapore and Chumperun. The price of rice remains high and steady throughout the Province. The latest report regarding the affected tract in the Patna division shows that the attendance on relief works has fallen off considerably; but in Muzaffarpur and Darbhanga, owing to interruption of communications caused by heavy rain, prices have risen almost to famine rates. In Chumperun anxiety is felt for the crops for want of fine weather, and destitution is said to be spreading.

North-Western Provinces and Oudh.—*For week ending 10th July.*—Good rain everywhere. *Kharif* operations progressing satisfactorily. Prices almost stationary. Markets fairly supplied.

Punjab.—*For week ending 10th July.*—Good rain has fallen in all districts, except at Peshawar. Prices are falling in Shahpur, fluctuating in Peshawar,

slightly rising in Mooltan, and stationary elsewhere. Ploughings for and sowings of *kharif* crops in progress. Rain has done much good to the crops at Sialkot. Prospects of standing crops are good. Sugarcane and cotton crops promise well. Stock cattle are reported healthy. Fodder sufficient, except in the Dera Ismail Khan district.

Central Provinces.—*For week ending 10th July.*—There has been sufficient rain in all districts, with a very heavy fall in the Jubbulpore tahsil. Sowing and weeding continue. Prospects favourable. Prices steady.

Burma.—*For week ending 6th July.*—Seasonable rainfall throughout Lower Burma. In Upper Burma in the Kyaukse and Meiktila districts the rainfall was slight and in Yamethin very heavy, destroying some crops. The price of paddy has risen in Prome and Toungoo, and slightly in Pegu and Thayetmyo; the prices at other districts in Lower Burma remain unchanged. In Upper Burma a rise is shown in the prices in the Ruby Mines, Sagaing, and Yamethin, and a fall in Myingyan and Pyinmana districts. The food-supply is sufficient.

Assam.—*For week ending 10th July.*—Heavy rain in most districts. Rivers high. Transplanting of winter rice and reaping of early rice impeded in some districts by floods. Tea and growing crops doing well.

Mysore and Coorg.—*For week ending 10th July.*—Good rain in Civil and Military Station of Bangalore, and heavy rain in the Bangalore district. Rain has fallen more or less throughout the State. Standing crops good, but more rain wanted in one taluka of the Hassan district. Outturn of crops in Tumkur district averages from half to two annas. Prices slightly risen in the Bangalore district.

Rains continue light in Coorg. Standing crops in good condition.

Berar and Hyderabad.—*For week ending 10th July.*—Average rainfall fair. Cotton sowing nearly finished. Sowing of *jowari*, *til*, and *tur* continues. Fodder sufficient, except in Amraoti district. Prices stationary. Agricultural stock good.

Some rain in Hyderabad during the week. Scarcity of fodder still felt. Prices stationary.

Central India.—*For week ending 10th July.*—Rain throughout Central India during the week; heavy in Gwalior. Agricultural operations completed in Bhopal; elsewhere in progress. Condition of standing crops and of pasture good. Prices are high, except in Neemuch, where they are falling.

Rajputana.—*For week ending 10th July.*—No rain in Bickaneer and Dholepur; elsewhere moderate. Agricultural operations progressing. Agricultural stock good, except in Meywar and Bickaneer. Pasturage or fodder scarce in Kherwara and Meywar. Prices steady generally.

Nepal.—*For week ending 4th July.*—Good rain. Weather cloudy. Rain daily during the week, but weather very warm. Indian corn progressing. Late autumn rice replanted.

E. C. BUCK,
Secretary to the Government of India.

GOVERNMENT OF INDIA.
PUBLIC WORKS DEPARTMENT.
RAILWAY TRAFFIC.

NO. XI OF 1889-90.

APPROXIMATE STATEMENT OF GROSS RECEIPTS AND EXPENSES OF INDIAN RAILWAYS.

N.B.—As regards the figures in column Total Receipts from 1st April to date, audited figures have been used as far as possible.

Latest Return received.	RAILWAYS.	Length in miles, open.	RECEIPTS FOR WEEK ENDING 16TH JUNE, 1888.		RECEIPTS FOR WEEK ENDING 15TH JUNE, 1889.		TOTAL RECEIPTS FROM 1ST APRIL TO 16TH JUNE, 1888.		TOTAL RECEIPTS FROM 1ST APRIL TO 15TH JUNE, 1889.		Total increase in 1889-90.	Total decrease in 1889-90.
			Total.	Per mile open.	Total.	Per mile open.	Total.	Per mile open per week.	Total.	Per mile open per week.		
	<i>State Lines worked by Companies.</i>											
Last 8 days of June 1889												
1st ditto	East Indian	1,514	8,25,099	548	1,514	9,32,013	649	1,04,75,403	629	1,05,72,598	635	97,105
2nd ditto	Pitna-Gya	57	6,812	119	57	7,798	136	96,848	154	98,935	157	2,087
3rd ditto	Dildarnagar-Ghazipur	112	886	74	12	916	76	14,304	108	10,923	83	... 3,381
22nd June, 1889	Rajputana-Malwa	1,604	3,81,462	229	1,604	4,10,000	246	44,04,570	241	51,21,124	284	7,22,948
23rd ditto	Bengal-Nagpur (a)	180	24,662	132	293	28,829	98	4,49,068	220	5,68,863	179	1,19,195
24th ditto	Bengal Nagpur-Sancitor Coal Section	...	...	...	12	(b) 461	38	...	(b) 461	38	461	...
22nd ditto	Southern Maratha (c)	850	60,975	81	857	77,571	91	9,05,414	97	10,02,664	106	97,250
22nd ditto	Du. Mysore Section	140	10,452	75	219	14,631	68	1,15,390	75	1,39,994	66	44,004
22nd ditto	Indian Midland	211	(d) 29,303	139	974	(e) 60,832	99	(d) 27,309	118	(e) 7,29,938	112	4,50,049
15th ditto	Vellore-Dharmavaram (Nellore Branch)	83	3,792	46	83	7,794	94	44,973	49	52,790	59	7,817
	Bareilly-Pilibhit	30	1,204	33	36	1,096	47	18,587	47	24,913	63	6,326
	TOTAL	4,753	13,50,642	385	5,421	15,92,741	294	1,67,99,072	321	1,83,49,623	316	15,50,551
	<i>State Lines worked by Government.</i>											
22nd June, 1889	North-Western (f)	2,411	4,45,222	185	2,386	5,54,632	232	52,34,052	197	59,34,075	229	7,00,023
22nd ditto	Oudh and Rohilkund	693	1,49,648	210	692	1,40,207	211	18,00,303	237	19,48,989	256	1,48,080
22nd ditto	Bengal Central	123	20,900	67	125	19,340	155	1,24,933	91	1,36,512	114	31,584
22nd ditto	Wardha Coal	45	11,916	263	45	13,448	298	1,70,370	344	1,98,012	405	27,636
	Eastern Bengal Railways	673	1,38,801	206	673	1,65,150	245	15,84,124	214	17,50,181	236	1,66,057
Last 8 days of June 1889	Nalhati	27	2,104	79	27	2,870	106	20,303	68	19,541	65	...
22nd June, 1889	Tirhoot	239	34,404	133	273	40,935	130	4,40,967	150	4,32,032	144	5,665
22nd ditto	Lucknow-Sitapur-Shraman	105	7,021	67	105	7,700	73	64,315	36	81,020	70	10,705
8th ditto	Jorhat	25	931	37	25	1,534	91	11,382	34	12,590	40	1,208
15th ditto	Cherra-Companyganj-Burma	392	50,986	153	553	83,300	151	2,14,014	176	10,82,749	178	3,68,135
	TOTAL	4,755	8,04,994	181	4,6904	10,35,152	211	4,03,52,294	195	1,16,16,943	218	14,64,649
	<i>Lines worked by Guaranteed Companies.</i>											
22nd June, 1889	Madras	840	1,59,155	189	840	2,05,004	244	17,72,853	192	20,13,047	221	2,40,194
22nd ditto	South Indian	654	1,17,153	104	654	1,01,213	183	12,06,274	108	12,82,538	181	81,264
22nd ditto	Great Indian Peninsula	1,427	(f) 7,41,647	499	1,440	(g) 5,28,933	416	1,24,33,900	252	(k) 95,03,702	605	...
22nd ditto	Bombay, Baroda and Central India (f)	461	2,46,960	530	461	2,74,000	594	34,21,262	675	35,61,655	712	1,40,393
	TOTAL	3,452	12,59,734	365	3,395	11,09,150	353	1,88,34,349	496	1,63,61,942	444	24,68,407
	GRAND TOTAL (GUARANTEED AND STATE)	12,960	34,77,373	268	3,720	38,27,043	278	4,57,85,715	321	4,63,34,508	313	5,40,793
	GROSS ESTIMATED EXPENSES	...	...	...	...	...	...	2,12,29,544	149	2,16,01,088	146	3,71,544
	NET RECEIPTS	...	...	...	...	...	...	2,45,30,171	172	2,17,13,140	167	2,75,249
	<i>Assisted Companies.</i>											
Last 8 days of June 1889	Tiraksheshwar	22	4,708	191	22	6,440	293	69,583	284	72,673	297	3,090
8th June, 1889	Dibr.-Nadiya	...	...	...	...	(g)	...	(h) 8,3803	107	(i) 90,096	123	12,293
Last 8 days of June 1889	Bengal and North Western	376	55,626	148	376	55,710	148	6,55,303	158	6,55,775	161	472
15th June, 1889	Rohilkhand-Kumaun	67	6,306	97	67	6,747	103	82,171	111	91,719	124	9,548
	TOTAL	463	66,342	143	463	68,807	148	8,90,860	149	9,16,263	155	25,403
	<i>Native States.</i>											
22nd June, 1889	His Highness the Nizam's Guaranteed Company	277	30,588	110	354	31,947	90	3,36,320	110	4,45,869	116	1,09,549
22nd ditto	His Highness the Gaekwar's	59	2,576	49	59	2,880	49	39,838	61	33,983	53	...
22nd ditto	His Highness the Gaekwar's Mehammar-Vadnagar	21	875	42	27	1,100	40	13,759	...	14,021	48	1,262
22nd ditto	Bhavnagar-Goardia-Junagadh-Purbatitar	193	16,957	88	260	114	2,81,881	133	3,91,036	139	1,09,155	
22nd ditto	Morvi	105	2,110	43	68	4,713	69	54,740	73	57,872	77	3,130
22nd ditto	Jodhpore	124	7,770	63	124	6,300	53	80,583	63	80,410	60	...
	TOTAL	742	61,970	84	892	77,200	87	8,12,123	100	10,23,191	106	2,11,068

(a) Includes the Katni-Umaria Branch.
 (b) Receipts for 8 days ending 15th June, 1889.
 (c) Includes the Bellary-Kurnool State Railway.
 (d) Includes the Sindia State Railway.
 (e) Includes the Sindh and Bhopal-Barsoi State Railways.
 (f) Includes the Amritsar-Patshah Kot and Majipura-Bhatinda State Railways.
 (g) Return not received.

(h) Total receipts from 1st April to 9th June, 1888.
 (i) Total receipts from 1st April to 9th June, 1889.
 (j) Includes the Dholi-Manmad, Khamgaon, Amravati, and Bhopal-Irrawaddy State Railways.
 (k) Includes the Dholi-Manmad, Khamgaon, and Amravati State Railways.
 (l) Includes the Patri Branch.

SIMLA, 15th July, 1889.

M. C. BRACKENBURY, Major, R.E.,

Under Secretary



SUPPLEMENT TO
The Gazette of India.

No. 29. } CALCUTTA, SATURDAY, JULY 20, 1889.

OFFICIAL PAPERS.

A SUPPLEMENT TO THE GAZETTE OF INDIA will be published from time to time, containing such Official Papers and information as the Government of India may deem to be of interest to the Public, and such as may usefully be made known. The Debates of the Legislative Council of His Excellency the Governor General will in future be published in PART VI of the GAZETTE.

Non-Subscribers to the GAZETTE may receive the SUPPLEMENT separately on a payment of five Rupees per annum if delivered in Calcutta, or eight Rupees if sent by Post. The SUPPLEMENT and PART VI of the GAZETTE can also be subscribed for separately in a payment of Rupees six per annum if delivered in Calcutta or Rupees nine if sent by Post.

No Official Orders or Notifications, the Publication of which in the GAZETTE OF INDIA is required by Law, or which it has been customary to obtain in the CALCUTTA GAZETTE, will be included in the SUPPLEMENT. For such Orders and Notifications the body of the GAZETTE must be looked to.

GOVERNMENT OF INDIA.
PUBLIC WORKS DEPARTMENT.
RAILWAY TRAFFIC.

**RETURNS OF ACCIDENTS ON INDIAN RAILWAYS FOR THE FOURTH QUARTER OF
1888.**

No. 298 R. T., dated Simla, the 3rd July 1889.

RESOLUTION—By the Government of India, Public Works Department.

Read again—

Public Works Department Resolution No.	485 R. T., dated 2nd June 1884.
" "	" 559 R. T., dated 20th June 1885.
" "	" 570 R. T., dated 10th June 1886.
" "	" 764 R. T., dated 29th June 1887.
" "	" 866 R. T., dated 20th August 1888.
" "	" 9400 R. T., dated 28th March 1889.

Read also—

Director General of Railways' No. 82 (Statistical), dated the 13th June 1889, forwarding the Abstract Returns of Accidents to Trains, &c., on the open lines of Railway in India for the quarter ended 31st December 1888.

OBSERVATIONS.—As compared with the average of the five* corresponding previous quarters, the number of accidents to trains, rolling-stock, permanent-

* Except where statistics for five quarters are not available for any line.

way, &c., shows an increase of 14, or 2·24 per cent. with an increase of 1,976·5 miles, or 15·84 per cent. in the mean mileage open, and of 1,598,973 miles, or 14·55 per cent., in the train mileage. The following are the Railways on which the more important fluctuations occurred:—

RAILWAY.	Number of ac- cidents.	ACCIDENTS.				TRAIN MILEAGE.	
		In- crease.	De- crease.	Per centage of increase.	Per centage of de- crease.	Per centage of in- crease.	Per centage of de- crease.
Bengal-Nagpur	30	22	...	275·00	...	58·27	...
Southern Mahratta	37	26	...	236·36	...	113·35	...
North-Western	76	...	62	...	44·93	21·20	...
Eastern Bengal	60	...	11	...	15·49	37·46	...
Great Indian Peninsula	29	...	10	...	25·64	7·91	...
Oudh and Rohilkhand	43	24	...	126·32	...	24·87	...
The Nizam's	19	11	...	137·50	...	35·81	...

2. Of the increase of 22 accidents in the Bengal-Nagpur Railway, 5 were under "Goods trains or parts of goods trains, engines, &c., leaving the rails" and three were under "Trains running over obstructions on the line."

3. On the Southern Mahratta Railway the number of accidents rose from 11 to 37, or 236·36 per cent., with an increase of 424·25 miles, or 98·61 per cent., in the mean mileage worked, and of 215·238 miles, or 113·35 per cent., in the train mileage run. The increase chiefly occurred under "Trains running over cattle on the line" and "Fire in trains," the number recorded under the former being 16 against 5 and under the latter 7 against nil.

4. Of the decrease of 62 accidents on the North-Western Railway, 14 appear under "Goods trains or parts of goods trains, engines, &c., leaving the rails" 6 under "Bursting of tubes, &c., of engines"; 8 under "Failure of couplings"; 7 under "Fire in trains"; and 10 under accidents classed as "Other accidents."

5. The decrease on the Eastern Bengal State Railways was mainly due to 17 cattle accidents having been returned against an average of 27 accidents during the five corresponding previous quarters.

6. On the Great Indian Peninsula Railway there was a decrease of 9 accidents under "Goods trains, or parts of goods trains, engines, &c., leaving the rails," and 5 under "Trains running over cattle on the line"; and an increase of 5 under "Fire in trains."

7. On the Oudh and Rohilkhand Railway the number of cattle accidents exhibits the largest increase, being 23 against 9.

8. On His Highness the Nizam's Guaranteed State Railway, the only noticeable difference was an increase from 1 to 6 under "Failure of machinery, springs, &c., of engines."

9. The casualties resulting from accidents to trains, &c., were, among passengers and others, 1 killed and 6 injured against 2 killed and 10 injured, and, among servants, 3 killed and 11 injured, against 3 killed and 7 injured. Of the casualties to passengers, 4 were persons slightly injured on the Burma State Railway in consequence of a down goods train colliding with an up mixed train

which was standing on the platform line at Hpoogee station, the pointsman having turned the down goods train on to the wrong line.

10. On the Tirhoot State Railway a serious collision took place between a mixed train and 18 wagons at the Motiharee goods-shed line, on the 24th November, 1888, owing to the carelessness of the station staff. Three coolies who were loading goods into the wagons were killed on the spot, and 4 seriously injured.

11. The following table exhibits the number of accidents under the different classes, due to accidents to trains, rolling-stock, permanent-way, &c., and the number of persons killed and injured thereby, *vide* Tables Nos. 3 and 4.—

	Average of corresponding quarters of five previous years.	FOURTH QUARTER 1888.						Total all classes.	
		No.	Number of passengers and others.		Number of servants.				
			Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	
1	Collisions between passenger trains, or parts of passenger trains	1	2	...	1	...	...	...	1
2	Collisions between passenger trains, and goods or mineral trains engines and vehicles standing foul of the line	11	7	...	4	3	4	3	8
3	Collisions between goods trains, or parts of goods trains	15	24	...	...	...	2	...	2
4	Collisions between light engines	2	5	...	...	...	3	...	2
5	Passenger trains or parts of passenger trains leaving the rails	20	20	...	...	...	1	...	1
6	Goods trains, or parts of goods trains, engines, &c., leaving the rails	85	68	...	...	...	...	...	...
7	Trains or engines travelling in the wrong direction through points	12	9	...	...	...	...	...	...
8	Trains running into stations or sidings at too high a speed	2	2	...	...	...	...	...	...
9	Trains running over cattle on the line	198	193	1	...	...	...	1	...
10	Ditto over obstructions on the line	20	28	...	...	...	...	...	...
11	Ditto through gates at level crossings	11	23	...	...	...	...	...	...
12	The bursting of boilers of engines	21	23	...	...	...	...	...	...
12a	The bursting of tubes, &c., of engines								
13	The failure of machinery, springs, &c., of engines	55	61	...	...	...	...	...	...
14	The failure of tyres	3	6	...	...	...	...	...	...
15	Ditto of wheels	...	6	19	...	...	...	...	...
16	Ditto of axles	...	6	19	...	...	...	...	...
17	Ditto of brake apparatus	...	...	...	...	...	...	...	...
18	Ditto of couplings	42	19	...	...	...	...	...	...
19	Ditto of tunnels, bridges, viaducts, culverts, &c.	...	...	...	...	...	...	...	...
20	Broken rails	10	9	...	...	...	...	...	...
21	The flooding of portions of permanent-way	9	12	...	...	...	...	...	...
22	Slips in cuttings or embankments	4	1	...	...	...	...	...	...
23	Fire in trains	30	41	...	...	...	...	...	...
24	Fire at stations, or involving injury to bridges or viaducts	5	12	...	...	...	...	...	...
25	Other accidents	56	54	...	3	...	2	...	3
	1888	...	638	1	6	3	14	4	17
TOTAL	{ Average of corresponding quarters of five previous years*	...	624	2	10	3	7	5	17

* Except where statistics for five quarters are not available for any line.

12. The principal variations occurred under "Collisions between goods trains, or parts of goods trains," 24 against 15; "Goods trains, or parts of goods trains, engines, &c., leaving the rails," 68 against 85; "Trains running through gates at level-crossings, 23 against 11; "Failure of axles," 19 against 6; and Failure of couplings," 19 against 42.

13. The increase under "Collisions between goods trains, or parts of goods trains" was chiefly due to the number of accidents recorded on the Rajputana-Malwa State Railway being 9 against 2.

14. The number of "Goods trains, or parts of goods trains, engines, &c., leaving the rails" principally decreased on the North-Western and Great Indian Peninsula Railways, being on the former 1 against 15, and on the latter 3 against 10. The largest number of accidents of this class occurred on the Dibru-Sadiya Railway, *viz.*, 10 against 9, the average of three corresponding quarters.

15. Of the 23 cases of "Trains running through gates at level-crossings" 8 occurred on the South Indian Railway, and of 61 cases of "Failure of machinery, springs, &c., of engines," 17 occurred on the North-Western Railway, 13 on the Eastern Bengal State Railway and 8 on the South Indian Railway.

16. Of the Rajputana-Malwa State Railway, there were 10 cases of "Failure of axles" out of a total of 19.

17. The decrease of 23 accidents under "Failure of couplings" was mainly due to decreases on the Rajputana-Malwa State, North-Western, and Dibru-Sadiya Railways.

18. The number of cases of "Fire in trains" was the largest on the North-Western Railway, *viz.*, 13 out of a total of 41; but as compared with the average of five corresponding previous quarters, there was a decrease of 7 accidents under this head.

19. Of the 54 accidents classified as "Other accidents," 26 have been returned by the Bombay, Baroda and Central India Railway.

20. The casualties to passengers from causes other than accidents to trains, &c., *vide* Table No. 2; were:—

CAUSE OF ACCIDENT.	FOURTH QUARTER, 1888.		AVERAGE OF CORRESPONDING QUARTERS OF FIVE PREVIOUS YEARS.*	
	Killed.	Injured.	Killed.	Injured.
From falling between carriages and platforms	2	4	1	3
Falling on to the platform, ballast, &c., when getting into or out of trains	2	9	2	3
Whilst crossing the line at stations	1	3	...	...
By closing of carriage doors	...	1	...	1
Falling out of carriages during the travelling of trains	6	14	4	13
Other accidents	1	8	2	4
TOTAL	12	39	9	24

* Except where statistics for five quarters are not available for any line.

21. The accidents to servants in the employ of Railways or of Contractors, whilst performing duties connected directly with the transit of passengers and goods, from causes other than accidents to trains, &c., were as follows, *vide* Table No. 2:—

CAUSES OF ACCIDENT.	FOURTH QUARTER, 1888.		AVERAGE OF CORRESPONDING QUARTERS OF FIVE PREVIOUS YEARS.*	
	Killed.	Injured.	Killed.	Injured.
During shunting operations	10	9	5	8
Falling off engines, vans, wagons, &c.	9	12	3	10
Coming in contact with over-bridges, &c., during the travelling of trains . . . . .	...	1	...	1
Coming in contact, while shunting, with vehicles, &c., standing in adjoining lines . . . . .	...	1	...	1
Getting on or off trains, engines, &c.	1	8	3	5
Whilst loading, unloading or sheeting	1	17	1	10
Whilst breaking, spragging, or choking wheels . . . . .	...	1	...	...
Whilst working at cranes or capstans . . . . .	...	3	...	1
Whilst working on the permanent-way or in sidings	1	4	1	4
Whilst walking along the line on the way home, or to work	2	4	2	2
Whilst walking, crossing, or standing on the line	7	11	7	8
Whilst passing between vehicles	1	...	1	1
Whilst attending to the machinery of engines, cleaning them, &c.	1	1	...	4
Whilst attending to gates at level-crossings . . . . .	...	...	1	1
Falling, or being caught between vehicles and platforms . . . . .	...	2	1	2
Falling off ladders, scaffolds, platforms, &c. . . . .	...	...	...	4
By falling of lamps, wagon doors, timber, weights, &c.	2	8	...	5
Whilst coupling or uncoupling wagons	3	8	3	7
Miscellaneous	6	43	4	18
TOTAL	44	140	32	96

22. Of other persons killed and injured by running trains, &c., 1 was killed and 3 injured whilst passing over the line at level-crossings; 41 were killed and 19 injured whilst trespassing on the line; 14 committed suicide, and 2 were injured in attempting to commit suicide; and 4 were killed and 2 injured from miscellaneous causes.

23. The following table exhibits the total number of persons killed and injured from all causes on the whole Indian Railway system, as compared with

* Except where statistics for five quarters are not available for any line.

the average of the corresponding quarters of five previous years, *vide* Table No. I:—

	FOURTH QUARTER, 1888.		AVERAGE OF CORRESPONDING QUARTERS OF FIVE PREVIOUS YEARS.*	
	Killed.	Injured.	Killed.	Injured.
PASSENGERS.				
From causes beyond their own control	1	10	2	12
From misconduct or want of caution	12	35	9	23
SERVANTS.				
From causes beyond their own control	8	32	2	13
From misconduct or want of caution	39	119	32	91
OTHERS.				
Whilst passing at level-crossings	1	3	1	1
Trespassers, including suicides	55	21	49	11
Other persons	4	2	4	2
TOTAL	120	222	90	153
TOTAL OPEN MILEAGE	<u>14,456½</u>		<u>12,480</u>	
TOTAL TRAIN MILEAGE	<u>12,588,692</u>		<u>10,989,719</u>	

24. In addition to the above, 11 persons are reported to have been killed and 44 injured in yards, workshops, &c., and 138 persons to have died in carriages and at stations from causes unconnected with the working of trains.

RESOLUTION.—The Government of India again notices the number of cases of "Failure of axles" on the Rajputana-Malwa Railway, 10 cases being reported during the quarter out of a total of 19 for all Railways. There was also a noticeable increase on the Rajputana-Malwa Railway under "Collisions between Goods trains or parts of Goods' trains."

2. Under "Goods trains or parts of Goods trains, engines, &c., leaving the rails," the Government of India is pleased to observe the decrease on the North-Western and the Great Indian Peninsula Railways.

3. Of 61 cases of "Failure of machinery, springs, &c., of engines," it is noticed that 17 occurred on the North-Western Railway and 13 on the Eastern Bengal Railway. A satisfactory decrease in the number of failures of couplings is shown for the Rajputana-Malwa, North-Western and Dibrusadiya Railways.

* Except where statistics for five quarters are not available for any line.

ORDER.—Ordered that this Resolution be communicated, for information,

The Governments of Madras, Bombay, Bengal, the North-Western Provinces and Oudh, and the Punjab.

The Chief Commissioners of the Central Provinces, Burma, and Assam.

The Resident at Hyderabad.

The Agents to the Governor General for Central India, Rajputana, and Baluchistan.

The Director General of Railways.

The Consulting Engineers to the Government of India for Railways, Calcutta, Lucknow and Central Division.

to the Local Governments, Administrations and Officers noted in the margin.

Ordered also that copies be forwarded for the information of Her Majesty's Government.

Ordered further that this Resolution, with the Abstract Returns, be published in the Supplement to the *Gazette of India*.

M. C. BRACKENBURY, Major, R.E.,
Under-Secretary.

Documents accompanying.

Abstract Returns of Accidents for the fourth quarter of 1888.

TABLE No. 1.

GENERAL TOTAL.

Newspaper of Persons reported during the Fourth Quarter of 1888 as KILLED or INJURED on the several RAILWAYS open for Traffic in INDIA, distinguishing between Passengers, RAILWAY SERVANTS, and Other PERSONS; and distinguishing also, in the case of the two former Classes, between ACCIDENTS happening from causes beyond their own control, and ACCIDENTS happening otherwise.

RAILWAYS.	Miles Mileage spent.	Passengers.		Railway Servants, or Servants of Contractors.		Others.	
		From their own re-schedule or want of caution.		From their own reckless or want of caution.		From their own reckless or want of caution.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
(a) 1,665	East Indian	1	3	3	8	28	6
(b) 1,650	Rejputana-Malwa	8	10	3	13	52	1
(c) 1,503	Bengal-Nagpur	1	2	1	3	7	1
(d) 1,652	1861	1	4	1	4	4	2
(e) { 1862	1961	1	4	1	4	4	2
127	Myore	1	1	1	1	1	1
1862	Southern Mahratta	3	1	2	1	1	1
4304	Indian Midland	1	1	1	1	1	1
(f) 854	North-Western	8	3	3	7	13	6
(g) 1,985	Wardha Coal	1	1	1	2	6	3
2,474	45	1	1	1	1	5	3
45	45	1	1	1	1	1	1
91	Lucknow-Sitapur-Shi- raman	1	1	1	1	1	1
105	{ 983	1	1	1	1	2	1
{ 728	Eastern Bengal Rail- ways	2	4	1	1	7	4
271	Nallatt	1	1	1	2	4	1
223	Tirhoot	1	1	1	1	2	1
278	Burma	1	1	1	1	1	1
392	4	1	1	1	1	1	1

44 Includes Anisicar-Pathokol and Kepor-Batayska Railways.

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TABLE

NUMBER of PERSONS reported during the FOURTH QUARTER of 1888 as KILLED or INJURED on the several RAILWAYS open for
practicable, the nature and causes of the

PASSENGERS.														
FROM CAUSES OTHER THAN ACCIDENTS TO TRAINS, &c.														
KILLED. INJURED.														
From accidents to trains, &c. See Table No. 4.														
RAILWAYS.														
STATE IMPERIAL.														
1 East Indian (e)	1	1	1	7	1	2	1	3	9	12	8	13	..	..
2 Rajputana-Malwa (f)	..	1	..	..	..	..	..	..	2	1	4	1	4	..
3 Bengal-Néppur (g)	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4 Mysore	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5 Southern Mahratta (h)	..	..	..	..	..	..	..	..	1	1	1	1	1	..
6 Indian Midland	..	..	..	..	..	..	..	..	1	1	1	1	1	..
7 North-Western (i)	..	2	..	1	1	..	8	..	7	7	..	..	..	..
8 Wardha Coal	..	..	..	..	..	..	..	..	..	..	..	..	..	..
TOTAL PASSENGERS.														
STATE PROVINCIAL.														
9 Lucknow-Sitapur-Silháraun	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10 Eastern Bengal Railways (j)	..	..	..	1	..	..	..	..	1	2	1	2	..	..
11 Nalhatí	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12 Tirkoot	..	..	..	..	..	1	..	..	1	1	8	4	..	..
13 Burma	..	..	..	..	4	..	..	..	..	..	4	..	..	..
14 Jerháit	..	..	..	1	..	..	..	..	..	1	..	..	..	..
15 Cherra-Companiganj	..	..	..	..	..	..	..	..	..	..	..	..	..	..
GUARANTEED COMPANIES.														
16 Madras	..	..	..	..	..	..	..	..	..	..	1	3	1	1
17 South Indian (g)	1	..	..	..	..	..	1	2	1	2	1	3	1	1
18 Great Indian Peninsula (k)	..	1	..	..	..	..	1	1	2	1	3	7	2	4
19 Bombay, Baroda and Central India	..	..	..	..	..	..	..	1	..	1	1	..	..	1
20 Oudh and Rohilkhand	..	..	..	..	..	..	..	1	..	1	1	2	1	1
ASSISTED COMPANIES.														
21 Darjeeling-Himalayan	..	..	..	..	..	..	..	..	..	..	..	..	1	..
22 Deoghar	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23 Bengal and North-Western	..	..	..	..	..	..	..	1	1	1	1	1	..	1
24 Rohilkhand-Kumaun (l)	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25 Thathú-Duyinásik	..	..	..	..	..	..	..	..	..	..	..	..	..	..
26 Dibrú-Sadiya	..	..	..	..	..	..	..	..	..	..	..	..	..	..
NATIVE STATES.														
27 The Nizam's (Guaranteed Company)	..	..	..	..	..	..	..	1	..	1	1	..	..	2
28 The Gaekwars	..	..	..	..	..	..	..	..	..	..	..	..	1	..
29 Bhavnagar-Gondal-Junagadh-Porbandar	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30 Morvi	..	..	..	..	..	..	..	..	..	..	..	..	..	..
31 Jodhpore	..	..	..	..	..	..	..	..	..	..	..	..	..	..
TOTAL	1886	6	2	4	6	9	1	3	1	6	14	1	8	12
	Average for 3 corresponding previous quarters (m)	2	11	1	3	2	3	1	4	13	2	4	9	24
		KILLED.	6	11	1	3	2	3	1	4	13	2	4	9
		INJURED.	11	10	9	9	12	1	1	1	1	1	1	1
		SEE TABLE NO. 4.	12	11	10	9	12	1	1	1	1	1	1	1
		FROM	11	10	9	9	12	1	1	1	1	1	1	1

(a) Andheri-Pune, Peth-Gad, Akkalkot-Vishwanagar and Tarkeshwar Railways.
 (b) " Gavilgad-Ahmednagar and Nimbana-Vadnagar Railways.
 (c) " Karjat-Uttam Railway.
 (d) " Belgaum-Kittur Railway.
 (e) " Aminpur-Nethankot and Rajapur-Dhatinda Railways.

No. 2.

Traffic in India, distinguishing between Passengers, Railway Servants, and Other Persons, and classifying, as far as ACCIDENTS occasioning the Death or Injury.

16. Including Northern Bengal, Tracca, Nagpur-Dhulia, Assam-Dibrugarh and Bengal Central Railways.

(f) Includes Northern Bengal, Bihar, Kolk.
(g) " Cuddapah-Nellore (Railways).

(g) " Cuddapah-Nellore railway.
(h) " Dindigul-Ramanad, Iluppu-Itarai, Khamgaon and Amravati Railways.

Except where substituted for by quartz

(j) Except where statutorily or by contract so provided, no such person

TABLE No. 3.

ACCIDENTS to TRAINS, RAILING-STOCK, PLANKEN-WAY, &c., reported during the FOURTH QUARTER of 1859 as having occurred on the several RAILWAYS open for Traffic in INDIA, distinguishing the different Classes of ACCIDENTS, and the Number of PASSENGERS and OTHERS, and of RAILWAY SERVANTS, KILLED or INJURED in each Class of ACCIDENT.

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26 AUGUST 1914

Great Western.

EAST LINES (a)		WESTERN MAIN LINE (b)		RAILWAY-MARSH (c)		RAILWAY-MARSH (d)		NORTH WEST LINES.		SOUTHERN MAIN LINE.	
No.	Number of Passengers and others.	No.	Number of Passengers and others.	No.	Number of Passengers and others.	No.	Number of Passengers and others.	No.	Number of Passengers and others.	No.	Number of Passengers and others.
1.	Collisions between passenger trains, or parts of passenger trains.	1	...	1	...	1	...	1	...	1	...
2.	Collisions between passenger trains and goods or mineral trains, engines, and vehicles standing foul of the line.	...	...	...	...	...	...	...	...	...	...
3.	Collisions between goods train, or parts of goods trains.	5	...	1	...	9	...	1	...	1	...
4.	Collisions between light engines leaving the rails.	1	...	1	...	2	...	1	...	1	...
5.	Goods trains, or parts of goods trains, engines &c., leaving the rails.	3	...	1	...	6	...	8	...	1	...
6.	Trains or engines travelling in the wrong direction through points.	2	...	1	...	...	...	1	...	1	...
7.	Trains running into stations or sliding at too high a speed over cattle on the line over obstructions on the line through gates at level-crossings.	...	...	...	...	38	...	5	...	16	...
8.	Ditto	8	...	...	...	6	...	8	...	1	...
9.	Ditto	4	...	...	...	5	...	1	...	1	...
10.	Ditto	...	...	...	...	1	...	2	...	...	...
11.	Ditto	...	...	...	...	8	...	1	...	...	...
12.	The bursting of boilers or engines	...	...	...	...	...	...	1	...	...	...
12(a).	Ditto of tubes, &c., of engines	...	...	...	...	...	...	...	...	...	...
13.	The failure of machinery, springs, &c., of engines	1	...	1	...	...	...	...	...	...	...
14.	Ditto of tyres.	...	...	...	...	...	...	...	...	...	...
15.	Ditto of wheels	...	...	...	...	...	...	...	...	...	...
16.	Ditto of axles	...	...	...	...	...	...	...	...	...	...
17.	Ditto of brake apparatus	4	...	1	...	10	...	5	...	1	...
18.	Ditto of couplings	...	...	...	...	...	...	2	...	...	...
19.	Ditto of tunnels, bridges, viaducts, embankments, &c.	...	...	...	...	...	...	1	...	...	...
20.	Broken rails	...	...	...	...	...	...	1	...	...	...
21.	The flooding of portions of permanent way	...	...	...	...	...	...	1	...	...	...
22.	Slips in cuttings or embankments	...	...	...	...	...	...	...	2	...	...
23.	Fires in trains	2	...	...	...	...	...	2	...	...	...
24.	Five at stations, or involving injury to bridges or viaducts	1	...	1	...	...	...	1	...	7	...
25.	Other accidents	...	...	...	...	...	...	3	...	4	...
32.	TOTAL CLASSES	32	1	...	1	91	...	30	...	37	1
Number of Passenger miles		256,532,895		25,248		114,621,826		6,335,662		7,968,449	
of Servable employed.		2,083,009		1,832		12,531		1,527,400		748	
Total mileage of all descriptions		405,120		54,379		39,486,868		3,914		748	

(a) Includes Sialia, Panj-Gye, Uldinggar-Qaiapur and Tirketihwar Railways. (b) Includes Gauport-Acherra and Mehsana-Vadnagar Railways. (c) Includes Kathi-Umota Railways. (d) includes Hellary-Kisna Railways.

TABLE NO. 3.—ACCIDENTS TO TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c., REPORTED DURING THE FOURTH QUARTER OF 1860, &c.

TABLE NO. 4.

Soc. for Industrial Psych.

1. Collisions between passenger trains, or parts of passenger trains
2. Collisions between passenger trains and goods or mineral trains, engines, and vehicles standing foul of the line
3. Collisions between goods trains, or parts of goods trains
4. Collisions between light engines
5. Passenger trains, or parts of passenger trains, leaving the rails
6. Goods trains, or parts of goods trains, engines, &c., leaving the rails
7. Trains or engines travelling in the wrong direction through points
8. Trains running into stations or sidings at too high a speed
9. Ditto over cattle on the line
10. Ditto over charioteers on the line
11. Ditto through gates at level-crossings
12. The bursting of boilers of engines
13. (a). Ditto of tubes, &c., of engines
14. The failure of machinery, springs, &c., of engines
15. Ditto of tyres
16. Ditto of wheels
17. Ditto of axles
18. Ditto of brake apparatus
19. Ditto of couplings
20. Ditto of tunnels, bridges, viaducts, culverts, &c.
21. Broken rails
22. The flooding of portions of permanent-way
23. Ships in embankments
24. Fire in trains
25. Fire at stations, or involving injury to bridges or viaducts
26. Other accidents

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of Servants example

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Train mileage of all descriptions

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and in Northern Bengal. *Ensatina*-*timorensis*, *Aeschna*-*Behar* and *Bergeri* Central Provinces.

André et al. (Central) Review

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SUPPLEMENT TO THE GAZETTE OF INDIA, JULY 20, 1889.

TABLE No. 3.—Accidents to Trains, Rolling-stock, Permanent-way, &c., reported during the Fourth Quarter of 1888, &c.—continued.

SEE ALSO TABLE No. 4.
SIXTH PROVINCE—contd.

NAME.	TRAM.			SCRA.			JOINT.			CROSS-COMMUN.		
	No.	Number of Passengers, Servants, and others.	Total All Classes.	No.	Number of Passengers, Servants, and others.	Total All Classes.	No.	Number of Passengers, Servants, and others.	Total All Classes.	No.	Number of Passengers, Servants, and others.	Total All Classes.
1. Collisions between passenger trains, or parts of passenger trains.												
2. Collisions between passenger trains and goods or mineral trains, engines, and vehicles standing foul of the line.												
3. Collisions between goods trains, or parts of goods trains.												
4. Collisions between light engines.												
5. Passenger trains, or parts of passenger trains, leaving the rails.												
6. Goods trains, or parts of goods trains, engines, &c., leaving the rails.												
7. Trains or engines travelling in the wrong direction through points.												
8. Trains running into stations or stations at too high a speed.												
9. Ditto over cattle on the line.												
10. Ditto over obstructions on the line.												
11. Ditto through gates at level-crossings.												
12. The bursting of boilers, &c.												
12 (B). Ditto of tubes, &c., of engines.												
13. The failure of machinery, Springs, &c., of engines.												
14. Ditto of tyres.												
15. Ditto of wheels.												
16. Ditto of axles.												
17. Ditto of brake apparatus.												
18. Ditto of couplings.												
19. Ditto of tunnels, bridges, viaducts, culverts, &c.												
20. Broken rails.												
21. The flooding of portions of permanent-way.												
22. Slips in embankments.												
23. Fire in trains.												
24. Fire at stations, or involving injury to bridges or viaducts.												
25. Other accidents.												
TOTAL ALL CLASSES	5	...	...	...	...	...	5	...	...	4	1	...
Number of Passenger miles	243,000						17,924,010			192,535		28,612,989
of Servants employed	116						1,763			46		4,463
Total mileage of all descriptions	12,517						138,304			123		6,913

TABLE No. 9.—Accidents to TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c., reported during the FOURTH QUARTER of 1888, &c.—continued.

No.	MADRAS.		SCOTCH INDIAN PENINSULA (a)		GREAT INDIAN PENINSULA (b)		BOMBAY, BARODA, AND CENTRAL INDIA.		ORDO AND BONDUKHAZ.		
	No.	Number of Passengers Servants, and others.	Total All Classes.	No.	Number of Passengers Servants, and others.	Total All Classes.	No.	Number of Passengers Servants, and others.	Total All Classes.	No.	
1. Collisions between passenger trains, or parts of passenger trains	...	...	...	...	...	...	...	...	...	...
2. Collisions between passenger trains and goods or mineral trains, engines, and vehicles standing foul of the line	2	...	...	...	...	...	...	...	...	...
3. Collisions between goods trains, or parts of goods trains	...	...	...	...	...	...	...	...	...	...
4. Collisions between light engines	1	...	...	...	...	...	...	...	...	...
5. Passenger trains, or parts of passenger trains, leaving the rails	2	...	...	...	...	...	...	...	...	...
6. Goods trains, or parts of goods trains, engines, &c., leaving the rails	8	...	...	...	...	...	...	...	...	...
7. Trains, or engines travelling in the wrong direction through points or sidings at too high a speed	...	...	...	...	...	...	...	...	...	...
8. Tires running over cattle on the line	16	...	...	...	...	...	...	...	...	...
9. Ditto	1	...	...	...	...	...	...	...	...	...
10. Ditto	2	...	...	...	...	...	...	...	...	...
11. Ditto	8	...	...	...	...	...	...	...	...	...
12. The bursting of boilers of engines	...	...	...	...	...	...	...	...	...	...
12(a). Ditto of tubes, &c., of engines	...	...	...	...	...	...	...	...	...	...
13. The failure of machinery, springs, &c., of engines	...	...	...	...	...	...	...	...	...	...
14. Ditto of tyres	1	...	...	...	...	...	...	...	...	...
15. Ditto of wheels	1	...	...	...	...	...	...	...	...	...
16. Ditto of axles	1	...	...	...	...	...	...	...	...	...
17. Ditto of brake apparatus	...	...	...	...	...	...	...	...	...	...
18. Ditto of couplings	...	...	...	...	...	...	...	...	...	...
19. Ditto of tunnels, bridges, viaducts, culverts, &c.	...	...	...	...	...	...	...	...	...	...
20. Broken rails	4	...	...	...	...	...	...	...	...	...
21. The flooding of portions of permanent-way	...	...	...	...	...	...	...	...	...	...
22. Slips in cuttings or embankments	3	...	...	...	...	...	...	...	...	...
23. Fire in train	...	...	...	...	...	...	...	...	...	...
24. Fire at stations, or involving injury to bridges or viaducts	...	...	...	...	...	...	...	...	...	...
25. Other accidents	...	...	...	...	...	...	...	...	...	...
TOTAL ALL CLASSES		41	...	...	...	...	...	...	...	...
Number of Passenger miles		79,164,475	67,109,445	135,607,949		64,745,572		53,877,650		53,877,650	
of Servants employed		6,465	6,213	2,569		6,570		6,570		6,570	
Train mileage of all descriptions		615,848	644,139	545,935		638,161		638,161		638,161	

(b) Includes Orissa-Madras, Bhupatlur, Khargow, and Androozi Railways.

(a) Includes Coddapuk-Nellore Railway.

SUPPLEMENT TO THE GAZETTE OF INDIA, JULY 20, 1889.

TABLE No. 3.—ACCIDENTS to TRAINS, &c., reported during the Fourth Quarter of 1888, &c.—continued.

SEE ALSO TABLE No. 4.

ACCIDENTS OVERVIEW.

DISEASE.—HIMALAYA.	Disease.		BIRMAN AND BURMA. WEIGHT.		BONKHOOM-KRISHNA. (a)		TAPROBANE.	
	No.	Number of Passengers and others.	No.	Number of Passengers and others.	No.	Number of Passengers and others.	No.	Number of Passengers and others.
1. Collision between passenger trains, or parts of passenger trains	1	...	...	...	...	...	...	...
2. Collision between passenger trains and goods or mineral train, engines, and vehicles standing front of the line	2	...	...	...	...	...	...	...
3. Collision between goods trains, or parts of goods trains	3	...	...	...	...	...	...	...
4. Collisions between light engines	4	...	...	...	...	...	...	...
5. Passenger trains, or parts of passenger trains, leaving the rails	5	...	...	...	...	...	...	...
6. Goods trains, or parts of goods trains, engines, &c., leaving the rails	6	...	...	...	...	...	...	...
7. Trains or engines travelling in the wrong direction through points	7	...	...	...	...	...	...	...
8. Trains running into stations or sidings at too high a speed	8	...	...	...	...	...	...	...
9. Ditto over cattle on the line	9	...	...	...	...	...	...	...
10. Ditto over electricians on the line	10	...	...	...	...	...	...	...
11. Ditto through gates at level-crossings	11	...	...	...	...	...	...	...
12. The bursting of boilers of engines	12	...	...	...	...	...	...	...
12(a). Bursting of tubes, &c., of engines	12(a)	...	...	...	...	...	...	...
13. The failure of machinery, spring-gear, of engines	13	...	...	...	...	...	...	...
14. Ditto of tyres	14	...	...	...	...	...	...	...
15. Ditto of wheels	15	...	...	...	...	...	...	...
16. Ditto of axes	16	...	...	...	...	...	...	...
17. Ditto of brake apparatus	17	...	...	...	...	...	...	...
18. Ditto of couplings	18	...	...	...	...	...	...	...
19. Ditto of tunnels, bridges, viaducts, culverts, &c.	19	...	...	...	...	...	...	...
20. Broken rails	20	...	...	...	...	...	...	...
21. The flooding of portions of permanent-way	21	...	...	...	...	...	...	...
22. Ships in cuttings or embankments	22	...	...	...	...	...	...	...
23. Fire in trains	23	...	...	...	...	...	...	...
24. Fire at stations, or involving injury to bridges or viaducts	24	...	...	...	...	...	...	...
25. Other accidents	25	...	...	...	...	...	...	...
TOTAL ALL CLASSES	5	...	...	...	...	...	...	...
	315,621		54		16,980,359		3,541	
	508				795			
	\$1,402				175,117		1,912	
Number of Passenger miles					30,833			
of Servants employed					60			
Total mileage of all descriptions					1,920			

— NO. 9.—Accidents to TRAINS. ROLLING-STOCK, PERMANENT-WAY, &c., reported during the FOURTH QUARTER of 1888. Ex.—continued.

SEE ALSO TABLE No. 4

Information General

1. Collisions between passenger trains or parts of passenger trains, or vehicles
2. Collisions between passenger trains and goods or mineral trains, engines, and vehicles
3. Standing foul of the line
4. Collisions between goods trains, or parts of goods trains
5. Collisions between light engines
6. Passenger trains, or parts of passenger trains, leaving the rails
7. Goods trains, or parts of goods trains, engines, &c., leaving the rails
8. Goods travelling in the wrong direction through points
9. Trains running into stations or sidings at too high a speed
10. Ditto over cattle on the line
11. Ditto over obstructions on the line
12. Ditto through gates at level-crossings
13. The bursting of boilers of engines
14. Ditto of tubes, &c., of engines
15. Ditto of machinery, springs, &c., of engines
16. Ditto of tyres
17. Ditto of wheels
18. Ditto of axles
19. Ditto of brake apparatus
20. Ditto of coupling
21. Ditto of tunnels, bridges, viaducts, culverts, &c.
22. Ditto of tanks
23. Broken rails
24. The flooding of portions of permanent way
25. Slips in cuttings or embankments
26. Fires in trains
27. Fire at stations, or involving injury to bridges or viaducts
28. Other accidents

Number of passenger miles	1,000,000
of servants employed	100
Train mileage of all descriptions	100

RAIL NO. 2.—ACCENTS TO TRAINS, ROLLING-STOCK, PERMANENT WAY, &c., reported during the FORTY QUARTERS of 1888, &c.—concluded.

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TABLE No. 4.

TABLE

ACCIDENTS TO TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c., on the several RAILWAYS open for traffic in INDIA during the FOURTH
Number of RAILWAY SERVANTS

Serial Number.	RAILWAYS.	Number of Railway Servants																			
		1.—Collisions between passenger trains, or parts of passenger trains.	2.—Collisions between passenger trains and goods or mineral trains, engines, and vehicles standing foul of the line.	3.—Collisions between goods trains, or parts of goods trains.	4.—Collisions between tank engines.	5.—Passenger trains, or parts of passenger trains, leaving the rails.	6.—Goods trains, or parts of goods trains, engines, &c., leaving the rails.	7.—Trains or engines travelling in the wrong direction through points.	8.—Trains running into stations or sidings at too high a speed.	9.—Trains running over cattle on the line.	10.—Trains running over obstructions on the line.	11.—Trains running through gates at level-crossings.	12.—The bursting of boilers of engines.	12(a).—The bursting of tubes, &c., of engines.	13.—The failure of machinery, springs, &c., of engines.	14.—The failure of tyres.	15.—The failure of wheels.	16.—The failure of couplings.	17.—The failure of brake apparatus.	18.—The failure of tunnels, bridges, viaducts, or culverts, &c.	19.—Broke rail.
STATE IMPERIAL.																					
1	East India (c)	1	...	5	...	1	3	2	...	33	6	3	8	4	1	1	1	10	4	1	1
2	Rajputana-Malwa (d)	9	1	2	5	1	5	3	...	1	5	8	16	1	1	1	1	1	2	1	1
3	Bengal-Nagpur (e)	...	...	1	...	1	3	2	...	25	...	3	...	...	...	1	1	1	1	1	1
4	Myano	...	...	...	...	1	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...
5	Southern Mahratta (f)	1	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	Indian Midland	1	...	1	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
7	North-Western (g)	2	1	9	...	3	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	Wardha Coal	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
STATE PROVINCIAL.																					
9	Lucknow-Sitapur-Sührāma	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	Eastern Bengal Railways (f)	2	1	...	4	6	...	17	6	...	...	...	...	...	...	...	18	1	2	4	...
11	Nalbāti	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	1	2	2	1
12	Tirhoot	1	...	...	1	...	...	1	...	...	1	1	2	...	...	...	...	...	2	...	...
13	Burma	1	...	1	...	8	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...
14	Jorhat	...	...	...	...	3	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...
15	Chota-Companyganj	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
GUARANTEED COMPANIES.																					
16	Madras	3	...	1	2	8	...	...	16	1	2	...	...	...	...	...	1	1	1	1	1
17	South Indian (g)	5	...	3	...	3	...	18	2	8	...	...	7	8	...	...	1	1	1	1	2
18	Great Indian Peninsula (h)	1	...	1	...	1	...	...	9	1	2	...	...	1	1	1	1	2	1	1	1
19	Bombay, Baroda and Central India	...	...	...	1	...	1	...	2	1	...	...	1	1	1	1	1	1	1	1	1
20	Oudh and Rohilkhand	1	...	1	...	2	1	1	23	2	2	...	...	2	...	...	...	...	...	...	5
ASSISTED COMPANIES.																					
21	Darjeeling-Himalayan	...	...	...	...	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	Deoghar	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	Bengal and North-Western	...	...	...	...	6	1	...	4	...	...	...	...	...	...	...	...	...	...	...	...
24	Rohilkhand-Kumaun (i)	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
25	Thaton-Duyinsâik	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	Dibra-Sailly	...	...	...	...	3	10	...	...	2	2	...	...	...	...	...	3	...	...	...	...
NATIVE STATES.																					
27	The Nizam's (Guaranteed Company)	...	...	...	...	2	...	...	6	...	...	6	...	...	6	...	3	1	1	1	1
28	The Gaekwar's	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	Bhavnagar-Gondal-Junagadh-Porbandar	...	...	...	...	1	...	1	...	5	...	...	...	...	...	...	...	...	...	...	...
30	Mervi	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	Jodhpore (j)	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...
TOTAL 1888		2	7	24	6	20	68	9	2	193	28	23	...	28	61	6	19	19	19	19	19
Average for 5 corresponding previous quarters (j)		1	11	15	2	20	85	12	3	198	20	11	21	65	8	8	42	1	1	1	1

(a) Includes Sindia, Patna-Gaya, Biyānagar-Ghāshpur and Tāraknath Railways.

(b) Cawnpore-Ahmedara and Māhabāī-Vādānagar Railways.

(c) Kāni-Umāgaon Railway.

(d) Bellary-Kittur Railway.

(e) Amritsar-Patshāhī and Mājpur-Bhatinda Railways.

No. 4.

QUARTER of 1888, distinguishing the different Classes of Accidents, the Number of Passengers and Others and the Killed or Injured thereby.

Serial Number.	Statistical Record of accidents to passengers.												TOTAL PASSENGERS.			
	23.—Slips in stations or embankments.		24.—Fire in stations, or in rolling stock, bridges or viaducts.		25.—Other accidents.		TOTAL ALL CLASSES.		Mean miles of Railway open.		PER MILE OPEN.					
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Number of Passengers carried.	Train mileage of all descriptions.	Passenger mileage.	Passenger mileage.	Per million of passengers carried.	Per million of passenger-mile.		
1	2	1	32	1	1	...	1	1,680	3,595,025	2,088,009	256,582,395	2,140	1,240	152,728		
2	9	4	91	...	...	...	...	1,6861	2,031,793	1,527,400	114,681,826	1,105	806	87,980
3	2	8	30	...	...	...	...	1961	227,507	124,903	6,355,662	1,159	636	32,886
4	1	...	3	...	...	...	...	1891	188,477	54,370	7,866,449	1,313	389	57,005
5	3	7	37	...	1	...	1	8541	936,795	405,190	50,486,868	1,106	474	35,878		
6	...	...	8	...	1	...	1	1361	57,479	35,678	4,002,418	422	262	428,376
7	13	2	76	...	3	...	1	2,474	2,872,748	1,819,517	188,417,910	955	736	55,949		
8	...	...	4	...	...	...	...	45	32,128	22,522	816,317	714	500	18,118
9	...	...	1	...	...	...	...	105	113,418	43,257	2,981,945	1,071	412	27,928
10	2	6	60	...	...	...	...	798	1,998,736	795,258	66,084,644	2,505	997	82,786
11	...	1	5	...	...	...	...	271	43,883	12,517	845,000	1,582	459	30,986
12	...	...	5	...	3	4	8	273	532,011	188,304	17,924,010	2,054	506	69,204
13	...	...	11	4	...	...	4	392	1,011,576	264,863	28,618,829	2,581	675	72,092
14	...	...	4	1	...	...	1	301	14,896	5,918	132,535	488	194	4,345
15	...	...	1	...	...	...	...	71	5,705	3,792	27,866	761	506	3,714
16	3	...	41	...	...	...	...	889	2,003,681	615,848	79,164,477	2,583	734	94,356
17	4	2	64	1	1	7861	1,886,098	(g)	(g)	67,108,445	2,559	739	91,088	
18	5	1	29	...	2	...	2	1,5081	2,405,618	2,871,288	185,607,949	1,600	1,677	90,210		
19	1	1	26	34	...	...	2	461	2,870,388	545,935	64,704,372	6,807	1,184	140,357
20	1	2	43	...	2	...	2	8921	1,147,174	688,161	53,877,650	1,667	922	77,830		
21	...	...	5	...	...	...	...	51	18,180	18,402	395,370	258	616	7,752
22	...	...	11	...	...	...	...	48	45,057	3,812	215,521	9,486	697	45,436
23	...	...	2	...	...	...	...	376	514,394	175,115	16,980,359	1,368	466	45,161
24	...	...	8	...	...	...	...	91	64,766	21,012	3,200,929	713	281	24,106
25	...	...	4	23	...	...	2	78	18,388	26,186	534,587	243	322	6,725
26	2	...	19	...	...	...	...	810	235,679	123,678	12,658,978	770	389	40,835
27	...	...	5	...	...	...	...	69	60,460	16,251	1,293,815	1,035	275	21,931
28	...	...	8	...	...	...	...	2081	225,915	98,520	9,620,854	1,062	448	46,088
29	...	...	1	...	...	...	...	68	81,874	20,673	1,148,010	480	304	16,883
30	...	...	1	...	...	...	...	124	66,150	24,758	2,930,278	588	200	23,704
31	12	1	41	12	54	638	1	6	311	4	17	14,4561	24,616,401	12,588,692	1,124,268,454	
32	9	4	36	5	56	624	2	10	8	7	5	17	12,480	19,100,994	10,989,719	919,620,125
33	1,580	981	72,886	0'105	
34	0'524	0'002	0'011	0'006	

(^a) Includes Northern Bengal, Dacca, Raubia-Dhaka, Amrit-Jalbar, and Bengal Central Railways.
 (^b) Cuddapah-Nellore, but excludes Pondicherry Railway.
 (^c) Dhoond-Morad, Bhagal-Bitar Khanpur, and Afrasut Railways.
 (^d) Barnali-Pilibhit Railway.
 (^e) Except where statistics for 5 quarters are not available for any line.

GOVERNMENT OF INDIA.
REVENUE AND AGRICULTURAL DEPARTMENT.

ABSTRACT SHOWING THE RESULT OF EMIGRATION FROM THE PORT OF CALCUTTA DURING
THE MONTH OF MAY, 1889.

No. I.—As to Age and Sex.

	NATAL.			TOTAL.		Grand Total.
	Males.	Females.	Total.	Males.	Females.	
Under 2 years	21	15	36	21	15	36
From 2 to 10 years	38	39	77	38	39	77
" 10 " 20 "	54	32	76	54	22	76
" 20 " 30 "	293	136	429	293	136	429
" 30 " 40 "	46	29	75	46	29	75
" 40 " 50 "	...	...	...	...	...	...
Above 50 years	...	...	...	...	...	...
GRAND TOTAL	452	241	693	452	241	693

No. II.—As to places whence Emigrants came to Calcutta for embarkation.

	NATAL.			TOTAL.		Grand Total.
	Males.	Females.	Total.	Males.	Females.	
Oriissa	...	...	...	...	...	...
Western Bengal	...	1	1	...	1	1
Central ditto	...	...	...	...	...	...
Eastern ditto	...	...	...	...	...	...
Behar	88	49	137	88	49	137
North-Western Provinces	221	140	361	221	140	361
Oudh	141	49	190	141	49	190
Central India	2	1	3	2	1	3
Punjab	...	...	...	...	...	...
Nepal and Native States	...	1	1	...	1	1
Mixed, Bombay and Madras	...	...	...	...	...	...
GRAND TOTAL	452	241	693	452	241	693

No. III.—As to Caste and Religion.

	Males.	Females.	Total.			
Brahmins and high castes	93	43	136	93	43	136
Agriculturists	208	95	303	208	95	303
Artisans	5	1	6	5	1	6
Low castes	141	90	231	141	90	231
Musulmans	5	12	17	5	12	17
Christians	...	...	...	...	...	...
GRAND TOTAL	452	241	693	452	241	693

Memo.

	Males.	Females.	Total.
1. Hindus	447	239	676
2. Musulmans	5	12	17
3. Christians	...	...	...
TOTAL	452	241	693

E. C. BUCK,
Secretary to the Government of India.

A

GOVERNMENT OF INDIA.

REVENUE AND AGRICULTURAL DEPARTMENT.

**Weather Review of India for the week ending at 8 a.m. on
Monday, July 15th, 1889.**

The weather during the week under review has, like that of the two preceding weeks, been on the whole quiet and of the normal monsoon character. Towards the close of the period a storm commenced to form over the Bay of Bengal, but the disturbance had not assumed any considerable proportions by the close of the week, and its effect on the weather, except in Northern India, was slight and unimportant. The differences of pressure between the south and north of the Indian region have been on the whole slighter than is ordinarily the case, and the monsoon currents have been in most cases below their normal strength.

The chart of the 9th showed the ordinary low pressure area over Sind and high pressure area over Malabar and the south of the Bay, with a trough of relatively low pressure over the Gangetic plain. This distribution is ordinarily associated with the most extended distribution of the monsoon current, and the chart shows moist rain-bearing winds in almost all parts of the Indian region. The principal features of this distribution were reproduced on the chart of the 10th, but the barometric difference between south and north was smaller and the force of the monsoon current lower. On the morning of the 11th the barometer was falling in all parts of the Indian region, except Bengal and Burma. The changes had not however affected the general distribution, which remained practically unchanged. The wind directions were generally fairly normal, but around the upper part of the Bay there was an irregular indraught towards the centre of the Bay, which probably indicated the existence of a small low pressure area between the Arakan and Circar Coasts. The Chart of the 12th showed a brisk to moderate barometric rise over North-Western India and a fall in most other places. These changes resulted in the production of very uniform pressures over the whole of Northern and Central India, accompanying which were very light and variable winds. Over the Peninsula moderate gradients existed and the wind blew strongly, more particularly on the North Konkan Coast. Around the upper part of the Bay the wind directions were unchanged. There was very little alteration on the 13th, except that the isobaric lines over the Bay now gave definite indication of the presence of a low pressure area over the centre of the Bay. Calms and light breezes prevailed over Northern and Central India, but over the Peninsula the monsoon continued to blow strongly. Conditions were unsettled on the Kattiawar Coast, where the wind directions were irregular and the weather squally. On the 14th the barometer was falling everywhere and the depression over the Bay was much better defined. Gradients were increasing over the Peninsula and the Bay, and the monsoon was blowing freshly, though at Bombay the force of the wind had decreased. The Bay monsoon apparently fed into the depression, as the winds over Northern India were light and rather variable. On the 15th the depression over the Bay displayed a well defined centre lying near the Orissa Coast. The barometer was falling everywhere, briskly in the North-West, and the general conditions presented a well marked example of a type of weather which is not uncommon during the progress of the south-west monsoon. The winds were cyclonic around the storm area; fairly normal elsewhere.

Temperature.—The variations of temperature from the mean have been much larger during the present than during the preceding week. This result is attributable to the variations in the extent of the monsoon currents; hence the irregularities are greatest in Upper India, where the variations in the monsoon current have been most marked. In Burma and the Central Provinces the mean temperature has been above the normal throughout. In Bengal, the North-Western Provinces, the Punjab, Guzerat, Central India, Sind, and Rajputana the earlier days of the week, when the monsoon current extended well over Northern India, were cool, while the latter days of the week, when the monsoon, under the action of the Bay depression, was interrupted, were considerably warmer than the average. In the Punjab the mean temperature was $9^{\circ}3$ below the normal on the 9th and $3^{\circ}6$ above on the 15th, giving a range of 13° for the week. In Madras the variations of temperature were the reverse of those

in Upper India. The first days of the week, when the rainfall was light, were warmer, and the latter days, when the depression was forming and rain falling, were cooler than the average. The maxima followed the same course as the mean temperature, only, of course, the variations were larger. For instance, the maximum at Lahore on the 9th was 22° below the normal, and on the 15th was 4° above.

The following table shows the excess or defect of the mean average temperatures of the different Provinces for the present and for the preceding week:

PROVINCES.	Difference of Mean Temperature of Last Week from Normal.	Difference of Mean Temperature of Present Week from Normal.
Burmah	+ $1^{\circ}2^{\circ}$	+ $2^{\circ}9^{\circ}$
Bengal	- $0^{\circ}2^{\circ}$	+ $1^{\circ}5^{\circ}$
North-Western Provinces	- $0^{\circ}8^{\circ}$	- $0^{\circ}2^{\circ}$
Punjab	- $0^{\circ}5^{\circ}$	- $3^{\circ}6^{\circ}$
Bombay	+ $1^{\circ}0^{\circ}$	+ $0^{\circ}1^{\circ}$
Central Provinces and Berar	+ $1^{\circ}4^{\circ}$	+ $2^{\circ}1^{\circ}$
Guzerat and Central India	- $0^{\circ}7^{\circ}$	+ $0^{\circ}6^{\circ}$
Sind and Rajputana	- $1^{\circ}1^{\circ}$	+ $1^{\circ}7^{\circ}$
Madras	+ $0^{\circ}1^{\circ}$	- $0^{\circ}4^{\circ}$

This table shows that there has been some deficiency of heat in the North-Western Provinces, the Punjab, and Madras, and some excess elsewhere.

Rain.—The principal features of the general rainfall of India during the past week have been the steady rain in the west and centre of the country, the sudden cessation of the rain in Northern India on the 13th, and the increase in the rainfall on the East Coast on the 14th.

The following is a brief description of the daily distribution.

On the 9th rain was general, except in Sind, where there was none, and on the East Coast, where there were only scattered showers. Lucknow had a heavy downpour, but otherwise the amounts were not large. On the 10th there was some falling off in the amount of rain received over Northern India, but no other change. The chart of the 11th showed that a large part of North-Western India, including the south of the Punjab, Rajputana, Guzerat, and Sind, were without rain, but that it had fallen in all other districts. On the 12th and 13th the same distribution prevailed, but on the 14th a sudden change took place, and rain almost ceased during that and the following day over Northern India, though it continued generally and fairly heavily elsewhere.

The table at the close of this Summary shows that at twenty-six out of the fifty-one divisions the rainfall of the week has exceeded and at twenty-three been less than the normal. The excess has been most marked over the Peninsula, where nearly every division reports an excess—in many cases very large. Over the whole of Burma, Bengal, and Assam, except the divisions of Assam (Brahmaputra) and Bengal (North), the week's rainfall has been deficient; but in Upper India the rain has been much heavier, the only districts reporting a deficiency in the North-Western Provinces and the Punjab being North-Western Provinces East, Oudh North, and the Punjab hill districts: in all other parts of those Provinces the rainfall has exceeded the average. Along the whole length of the West Coast from Malabar northward to Guzerat and Kattiawar the rainfall has been very heavy, but inland over the Deccan, Khandeish, and the Central Provinces the amounts are again short. Sind, Central India, and the east of Rajputana have also had deficient rains, but Rajputana West, as well as the whole of the eastern parts of the Peninsula, have had rains more or less above the normal.

The maximum amounts were unimportant in Burma and the greater part of Bengal and Assam. Perhaps the strongest evidence of the feebleness of the rains in this part of India is given by Cherrapunji, where the rainfall of the week was only $9\frac{1}{2}$ inches. North Bengal had several heavy amounts, and in Upper India the maximum amounts were generally above the normal. Falls of from 10 to 22 inches were measured along the West Coast, but in the interior of the Peninsula and over the Central parts of the country, except Berar, there were no important amounts. In Madras the extreme falls varied between 2 and 8 inches. The concluding column of the table shows that the seasonal rains are deficient over Burma, excessive over the whole of Northern India, except Bengal East, Orissa, Oudh North, and Punjab Central and Submontane. In Malabar and Mysore there is a certain amount of deficiency, but the other West Coast districts show an excess. In the central parts of the Peninsula and of India the rains are still deficient, while in Guzerat, Kattiawar, Rajputana, as well as over Madras, there is a fairly general excess.

SUPPLEMENT TO THE GAZETTE OF INDIA, JULY 20, 1889.

PROVINCE.	DIVISION.	RAINFALL DATA FOR WEEK ENDING JULY 15TH, 1889.			RAINFALL DATA FROM MAY 15TH TO JULY 15TH, 1889.		
		Average Actual Rainfall of Division.	Average Normal Rainfall of Division.	Excess or Deficit, in Inches.	Average Actual Rainfall of Season to date.	Average Normal Rainfall, May 15th to July 15th.	Excess or Deficit of (Seasonal) Rainfall expressed as a percentage.
		Inches.	Inches.	Inches.	Inches.	Inches.	Per cent.
BURMAH	Tenasserim	9.29	11.50	- 2.21	62.00	74.03	- 16
	Lower Burmah	2.51	4.92	- 2.41	27.97	37.24	- 25
	Central Burmah	1.25	3.86	- 2.61	20.08	29.85	- 33
	Upper Burmah	1.29	?	?	19.16	?	?
	Arakan	2.04	11.11	- 9.07	71.04	86.59	- 18
BENGAL AND ASSAM	Eastern Bengal	2.05	3.80	- 1.75	29.52	34.04	- 13
	Assam (Surma)	4.90	4.41	+ 0.49	54.24	43.58	+ 24
	Do. (Brahmaputra)	2.16	3.44	- 1.28	39.40	37.30	+ 6
	Deltic Bengal	0.87	2.40	- 1.53	19.68	19.41	+ 1
	Central Bengal	2.13	2.52	- 0.39	21.93	19.16	+ 14
	North Bengal	6.81	4.07	+ 2.74	45.79	42.45	+ 8
	Orissa	1.01	3.48	- 2.47	14.84	17.11	- 13
	Chota Nagpur	0.94	2.80	- 1.86	17.94	15.36	+ 17
	Bihar (South)	2.26	2.29	- 0.03	15.44	12.47	+ 24
	Do. (North)	2.10	2.15	- 0.05	20.54	16.29	+ 26
NORTH - WESTERN PROVINCES AND OUDH.	North - Western Provinces (East).	2.51	2.80	- 0.29	13.59	10.28	+ 32
	Oudh (South)	4.04	2.57	+ 1.47	13.21	10.30	+ 28
	Do. (North)	2.62	2.75	- 0.13	12.15	12.69	- 4
	North - Western Provinces (Central).	2.75	2.14	+ 0.61	9.40	7.77	+ 21
	North - Western Provinces (West).	2.53	1.67	+ 0.86	7.78	7.67	+ 1
PUNJAB	North - Western Provinces (Submontane).	3.93	2.92	+ 1.01	17.55	13.29	+ 32
	Punjab (South)	1.12	1.01	+ 0.11	5.01	4.51	+ 11
	Do. (Central)	2.62	1.55	+ 1.07	5.76	7.73	- 25
	Do. (Submontane)	1.96	1.88	+ 0.08	5.08	8.47	- 40
	Do. (Hill Districts)	6.32	6.37	- 0.05	28.46	24.69	+ 15
	Do. (North-West)	1.73	1.64	+ 0.09	6.84	5.72	+ 20
BOMBAY AND MALABAR COAST DISTRICTS (MADRAS).	Do. (West)	0.78	0.52	+ 0.26	2.80	2.27	+ 23
	Malabar	7.31	6.67	+ 0.64	55.68	58.02	- 5
	Madras (South Central)	2.89	0.57	+ 2.32	10.64	5.88	+ 81
	Coorg	6.51	1.16	+ 5.35	37.60	36.28	+ 4
	Mysore	0.87	0.80	+ 0.07	4.97	7.19	- 31
	Konkan	17.06	7.57	+ 9.49	63.83	46.41	+ 38
	Bombay Deccan	1.48	1.70	- 0.22	9.22	11.25	- 18
CENTRAL PROVINCES AND BERAR.	Hyderabad (North)	...	...	...	...	...	...
	Khandeish	0.75	1.50	- 0.75	5.13	9.22	- 44
	Berar	3.45	2.56	+ 0.89	10.68	12.44	- 14
	Central Provinces (West)	2.41	2.83	- 0.42	11.53	13.42	- 14
	Ditto (Central)	3.08	3.82	- 0.74	16.63	17.46	- 5
BOMBAY (NORTH)	Ditto (East)	2.39	3.07	- 0.68	15.11	17.32	- 13
	Guzerat	5.40	3.76	+ 1.64	14.22	13.74	+ 3
	Kattiawar	8.65	3.13	+ 5.52	13.13	10.59	+ 24
RAJPUTANA AND CENTRAL INDIA.	Sind	0.20	0.30	- 0.10	0.71	0.75	- 5
	Central India (East)	2.13	2.59	- 0.46	11.54	11.31	+ 2
	Rajputana (East), Central India (West).	1.61	2.04	- 0.43	9.09	7.65	+ 19
	Rajputana (West)	1.11	0.87	+ 0.24	3.86	3.30	+ 17
MADRAS	East Coast (North)	1.75	1.21	+ 0.54	11.38	9.78	+ 16
	East Coast (North) (a)	3.54	3.96	- 0.41	7	7	?
	Hyderabad (South)	2.20	1.22	+ 0.98	6.14	7.37	- 17
	Madras (Central)	2.91	0.81	+ 2.10	7.29	5.54	+ 32
	East Coast (Central)	1.40	0.91	+ 0.51	6.50	5.99	+ 9
	Ditto (South)	1.29	0.49	+ 0.80	5.12	4.42	+ 16
	Madras (South)	0.43	0.10	+ 0.27	2.16	2.87	- 25

W. L. DALLAS,
Assistant Meteorological Reporter to the
Government of India.

E. C. BUCK,
Secretary to the Government of India.

GOVERNMENT OF INDIA.

REVENUE AND AGRICULTURAL DEPARTMENT.

Weekly Report on the State of the Season and Prospects of the Crops.

Madras.—*For week ending 13th July.*—Rainfall slight in Tinnevelly; fair in Ganjam, Nellore, Trichinopoly, Madura, Coimbatore, and Salem; good elsewhere. Crops generally good, but withering in parts of Tinnevelly and Coimbatore, and suffering from want of rain or water in parts of North Arcot and Salem. Crops damaged by excessive moisture in parts of Vizagapatam. Water-supply insufficient in Chingleput, Coimbatore, and Salem. Stock suffering very badly, chiefly from rinderpest, in Malabar and badly in Kistna and Anantapur. Prices rising in eleven districts, falling in eight, and stationary in others. Cholera severe in the three northern districts. Labourers employed on last day of week,—on Rushikulya works, 4,105; Gopalpur Canal, 2,114; Ghat Roads, 1,927; drinking-water tanks and wells, 2,820; minor irrigation and other works, 3,615: decrease due to agricultural operations and cholera. Number on village relief on 6th July, 30,625; fed in kitchens, 5,549. Imports during week by sea and land, 613 tons. General prospects favourable, and considerably improved in Ganjam.

Bombay.—*For week ending 17th July.*—Rain general but deficient in parts of Deccan and Southern Mahratta Country, and sowing consequently retarded in parts of Nasik, Poona, Ahmednagar, Satara, Belgaum, and Dharwar. Standing crops good in parts of Shikarpur, Surat, Khandesh, Colaba, and Belgaum; *bajri* crop doing well in Ahmedabad, but insects damaging it in two talukas; young crops also damaged by caterpillars in two talukas of Kaira. Transplantation progressing in Shikarpur, Surat, Thana, and Colaba. Fodder scarce in parts of Nasik, Ahmednagar, Dharwar, and Kathiawar. Water scarce in parts of Ahmednagar and Dharwar. Prices rising in Khandesh and two talukas of Nasik, and falling in Panch Mahals.

Bengal.—*For week ending 16th July.*—The monsoon winds from the Bay have been feeble, and the rainfall of the week has been generally light and irregular. In Orissa general rain fell on the 15th and 16th, and showers were also numerous on these days in North and East Bengal. There was a break in the rains over the greater part of the Province, which was very welcome for agricultural purposes. More rain is however wanted in Burdwan, Hooghly, Balasore, Singbham, and Manbham. Cultivation is well forward. Rice and *bhadoi* sowings are nearly complete, and transplanting of seedlings is in progress. Early rice, jute, and sugarcane are doing well. Early rice has begun to be harvested in places in North Bengal, and is expected to be below an average crop. Indigo manufacture is proceeding. The prices of rice are high and almost stationary. According to the latest report, the attendance on relief works in Muzaffarpur and Durbhangha has fallen off from 17,278 and 14,656 to 10,114 and 6,270 respectively, and in certain localities prices have risen owing to interruption of communications by heavy rain.

North-Western Provinces and Oudh.—*For week ending 17th July.*—Average rain has fallen during the week, and the *kharif* prospects are everywhere good. Markets continue well supplied, and prices generally remain steady. The condition of cattle is good.

Punjab.—*For week ending 17th July.*—Rainfall general throughout the Province. Prices rising in Jullundur and Rawalpindi, falling in Shahpur, unsettled in Peshawar, and stationary elsewhere. Ploughings for and sowings of *kharif* crops in progress. More rain is wanted in Hissar. Prospects of standing crops good. Stock cattle are reported healthy. Fodder is said to be sufficient throughout the Province.

Central Provinces.—*For week ending 17th July.*—Good rain has fallen in all the northern districts, except in the Sihora tahsil of Jubbulpore, where the fall is short. More rain is also required for rice in Nagpur and parts of Chhattisgarh, but cotton and other crops are thriving. Nearly 1,600 cattle are reported to have died in Nimar during June.

Burma.—*For week ending 13th July.*—In Lower Burma, except in Moulmein and Tavoy, the rainfall was light. Rain is wanted in Sandoway, Henzada, and Prome. In Upper Burma heavy rain fell in Mandalay, Ruby Mines, Upper Chindwin, and Meiktila; elsewhere but little rain fell. The price of paddy rose 2 per cent. in Rangoon, 5 per cent. in Pogu, 8 per cent. in Thartawaddy, 7 per cent. in Prome, 5 per cent. in Shwegyin, 12 per cent. in Ruby Mines, 5 per cent. in Minbu, and 12 per cent. in Yamethin. Prices fell in Thayetmyo, Toungoo, and Magwe; elsewhere there was but little change. The food-supply is sufficient.

Assam.—*For week ending 17th July.*—Weather sultry. Rain wanted in Cachar. Some damage to crops by floods in Goalpara and Garo Hills. Transplanting of winter rice and reaping of summer rice continue. Prospects of tea good.

Mysore and Coorg.—*For week ending 17th July.*—Good rain in Civil and Military Station of Bangalore. Rainfall general. Crops good. Paddy and sugarcane harvested in parts. Prospects favourable. No material change in prices.

Very heavy rain in Coorg. Standing crops good.

Berar and Hyderabad.—*For week ending 17th July.*—Average rainfall good in Berar. Cotton sowing completed. Sowing of *jowari*, *tur*, and *til* nearly finished. Fodder sufficient, except in the Amraoti district. Agricultural stock good. No change in the price of food-grains. In Jalgaon, Akola district, cotton suffering from want of rain.

Slight rain at Hyderabad during the week. Prices stationary.

Central India.—*For week ending 17th July.*—No change of any importance. Fair rain throughout the week. Western Malwa reports crops not damaged and probable outturn good.

Rajputana.—*For week ending 17th July.*—Moderate rainfall throughout the Province,—heavier in Kerowlee and Dholepore. Agricultural operations satisfactory. Standing crops good. Agricultural stock poor in Meywar. Pasturage or fodder scarce in Meywar. Prices steady generally.

Nepal.—*For week ending 11th July.*—Good rainfall. Weather hot. Transplantation of rice is busily in progress. Prospects of Indian corn good.

E. C. BUCK,
Secretary to the Government of India.

GOVERNMENT OF INDIA.
PUBLIC WORKS DEPARTMENT.
RAILWAY TRAFFIC.

No. XII. OF 1889-90.

APPROXIMATE STATEMENT OF GROSS RECEIPTS AND EXPENSES OF INDIAN RAILWAYS.

N.B.—As regards the figures in column Total Receipts from 1st April to date, audited figures have been used as far as possible.

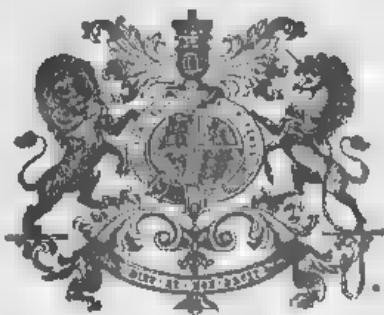
Latest Return received.	RAILWAYS.	Length mean open.	RECEIPTS FOR WEEK ENDING 23RD JUNE, 1888.		RECEIPTS FOR WEEK ENDING 23RD JUNE, 1889.		TOTAL RECEIPTS FROM 1ST APRIL TO 23RD JUNE, 1888.		TOTAL RECEIPTS FROM 1ST APRIL TO 23RD JUNE, 1889.		Total increase in 1889-90.	Total decrease in 1889-90.
			Total.	Per mile open.	Total.	Per mile open.	Total.	Per mile open per week.	Total.	Per mile open per week.		
	<i>State Lines worked by Companies.</i>											
Last 8 days of June 1889	East Indian	1,514	8,53,395	564	1,514	8,88,331	587	1,13,28,693	624	1,14,60,020	631	1,32,231
Ditto ditto	Patna-Gaya	57	7,599	133	57	7,843	137	1,04,447	152	1,06,778	156	2,331
Ditto ditto	Dildarnagar-Ghazipur	12	67	12	55	71	105	11,778	82	11,778	82	0
29th June, 1889	Rajputana-Malwa	1,664	3,94,041	237	1,664	3,97,000	239	47,98,617	240	55,27,832	280	7,29,215
First 6 days of July 1889	Bengal-Nagpur (a)	186	35,430	135	305	(b) 31,619	102	4,74,808	213	(b) 6,00,943	172	1,20,045
Ditto ditto	Southern Maruthi (c)	850	7,52,013	85	857	82,498	96	9,77,617	96	10,03,399	106	3,14,782
Last 8 days of June 1889	Do. Mysore Section	140	9,002	65	219	15,905	73	1,24,452	74	1,76,786	67	52,334
Ditto ditto	Indian Midland	211	(d) 29,707	141	674	(e) 60,123	89	(d) 3,03,616	120	(e) 7,80,884	109	4,83,208
29th June, 1889	Villupuram-Dharman- veram (Branch)	83	7,977	93	83	7,140	86	52,890	53	53,824	61	6,934
Last 8 days of June 1889	Bareilly-Pilibhit	30	1,430	40	36	1,095	47	29,017	46	29,014	62	6,597
	TOTAL	4,753	14,01,290	295	5421	14,93,023	275	1,82,00,362	319	1,98,50,707	313	10,50,405
	<i>State Lines worked by Government.</i>											
Last 8 days of June 1889	North-Western (f)	2,431	4,86,264	202	2,380	5,25,647	220	52,20,316	198	64,59,722	228	7,39,406
Ditto ditto	Oudh and Rohilkhand	693	1,43,950	208	602	1,49,955	215	19,44,252	235	20,90,140	253	1,53,088
Ditto ditto	Bengal Central	125	22,418	179	125	13,320	107	1,47,331	98	1,68,476	112	21,125
Ditto ditto	Wadhia Coal	45	10,184	226	45	14,076	313	1,80,560	334	2,12,088	397	31,528
Ditto ditto	Eastern Bengal Rail- ways	623	1,75,691	201	673	1,65,420	210	17,50,815	218	19,35,141	242	1,95,326
Ditto ditto	Nalhati	27	3,654	134	27	1,061	62	24,101	74	21,498	66	0
Ditto ditto	Tihout	256	35,875	139	273	38,040	139	4,62,842	149	4,73,306	144	10,464
Ditto ditto	Lucknow-Sitapur											
29th June, 1889	Sirhama	165	4,741	45	105	7,688	73	69,056	55	89,209	71	20,153
22nd ditto	Jorhat	23	1,317	53	25	682	39	12,699	42	13,572	40	873
22nd ditto	Chota-Companyganj	7	144	20	7	176	25	1,038	12	1,005	11	0
	Burma	392	60,127	153	553	70,585	144	7,74,741	174	11,63,135	175	3,88,394
	TOTAL	4,763	9,44,365	198	4,911	9,95,626	203	1,10,96,831	195	1,26,50,492	218	15,59,661
	<i>Lines worked by Guaranteed Companies.</i>											
29th June, 1889	Madras	840	1,60,441	202	840	2,00,910	232	10,42,294	193	21,00,809	230	2,45,515
29th ditto	South Indian	654	1,11,942	171	654	1,17,408	150	13,18,210	108	14,00,874	181	88,658
Last 8 days of June 1889	Great Indian Peninsula	1,497	(g) 6,33,811	424	1,440	(h) 5,24,700	303	1,30,07,771	725	1,00,35,899	585	30,31,878
29th June, 1889	Bombay, Baroda and Central India (i)	461	2,34,520	500	461	2,38,000	516	36,55,782	661	38,06,180	696	1,50,398
	TOTAL	3,452	11,49,714	333	3,395	10,81,034	318	1,09,84,063	482	1,24,39,762	433	25,44,301
	GRAND TOTAL (GUARANTEED AND STATE)	12,917	34,95,309	269	13,727	35,09,683	260	4,92,81,256	317	4,99,47,021	308	6,05,765
	GROSS ESTIMATED EXPENSES	...	...	...	...	...	...	2,30,43,730	148	2,34,46,417	144	3,82,087
	NET RECEIPTS	...	...	...	...	...	...	2,62,37,526	169	2,65,30,604	164	2,83,078
	<i>Assisted Companies.</i>											
Last 8 days of June 1889	Tarakeshwar	22	8,157	371	22	4,803	222	77,740	291	77,566	291	0
15th June, 1889	Dibrugarh	...	...	...	...	(j)	...	1,42,230	158	(l) 1,66,495	124	14,259
Last 8 days of June 1889	Bengal and North Western	320	54,107	144	376	52,500	140	7,00,400	157	7,05,065	158	0
Ditto ditto	Rohilkhand-Kumaun	97	7,800	116	67	7,147	107	80,971	112	98,693	123	3,722
	TOTAL	465	70,064	151	465	64,540	139	9,09,347	140	9,88,710	153	19,372
	<i>Native States.</i>											
Last 8 days of June 1889	His Highness the Nizam's Guaranteed Company	277	29,247	106	354	41,808	118	3,65,567	110	4,87,677	116	1,22,150
29th June, 1889	His Highness the Gaekwar's	59	2,495	42	59	1,720	29	42,333	60	33,984	58	0
29th ditto	His Highness the Gaekwar's Verangamp-Mehsana-Vadnagar	21	828	39	27	1,100	40	13,587	54	15,313	48	1,726
Last 8 days of June 1889	Bhavnagar-Gondal Junagarh-Porbandar	193	15,924	83	260	26,400	402	2,97,805	129	4,14,163	130	1,30,358
Ditto ditto	Morvi	68	2,689	40	58	4,310	63	57,429	70	63,072	76	4,643
29th June, 1889	Jodhpore	124	8,631	71	124	8,400	68	95,416	64	80,790	61	5,626
	TOTAL	742	60,014	81	892	83,738	94	8,72,137	98	11,08,999	105	2,36,861

(a) Includes the Katni-Umaria Branch.
 (b) Includes Sanctori Cual Section of the Bengal-Nagpur Railway.
 (c) Includes the Bellary-Kistna State Railway.
 (d) Includes the Sindia State Railway.
 (e) Includes the Sindia and Bhopal-Itarsi State Railways.
 (f) Includes the Amritsar-Pathankot and Kapurtha-Bhatinda State Railways.

(g) Includes the Dhond-Manmad, Khamgaon, Amraoti, and Bhopal-Itarsi State Railways.
 (h) Includes the Dhond-Manmad, Khamgaon, and Amraoti State Railways.
 (i) Includes the Patri Branch.
 (j) Returns not received.
 (k) Total receipts from 1st April to 16th June, 1888.
 (l) Total receipts from 1st April to 15th June, 1889.

M. C. BRACKENBURY, Major, R.E.,
Under Secretary.

Printed and published for the GOVERNMENT OF INDIA at the GOVERNMENT CENTRAL PRESS, Simla.



SUPPLEMENT TO
The Gazette of India.

No. 30.} CALCUTTA, SATURDAY, JULY 27, 1889.

OFFICIAL PAPERS.

A SUPPLEMENT to the GAZETTE OF INDIA will be published from time to time, containing such Official Papers and information as the Government of India may deem to be of interest to the Public, and such as may usefully be made known. The Debates of the Legislative Council of His Excellency the Governor General will in future be published in PART VI of the GAZETTE.

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GOVERNMENT OF INDIA.
DEPARTMENT OF FINANCE AND COMMERCE

Comparative Statement of the Net Indian Sea and Land Customs Revenue (excluding Salt Revenue) for the first three months of the official year 1889-90, and of the eighteen preceding years.
(In THOUSANDS OF RUPEES.)

FOR THE THREE MONTHS, APRIL TO JUNE.

YEAR.	BENGAL.			BOMBAY.			MADRAS.			BURMA.			TOTAL BRITISH INDIA.														
	On Imports of Other Goods	On Imports of Salt	On Exports of Other Goods	On Exports of Salt	On Imports of Other Goods	On Imports of Salt	On Exports of Other Goods	On Exports of Salt																			
1871-72	2,46	16,87	5,35	24,68	2,37	7,46	1,11	10,94	27	24	32	83	94	1,99	3,59	7,83	25	1,11	6,69	8,15	6,39	28,67	17,36	53,42			
1872-73	-	3,19	15,88	5,68	1,53	10,34	1,09	12,95	26	22	79	1,27	1,03	3,37	3,16	7,35	91	1,27	11,85	1,403	6,91	30,78	37,59	23,57			
1873-74	-	3,24	15,12	3,85	2,21	1,69	8,65	1,12	11,46	30	15	29	74	1,05	3,42	3,86	8,33	90	1,19	11,04	1,313	6,18	26,53	34,71	26,16		
1874-75	-	3,06	16,42	3,38	22,86	1,70	8,74	1,08	11,65	30	11	26	67	91	3,70	3,21	7,82	1,11	1,79	8,09	10,99	7,08	30,76	37,84	15,05		
1875-76	-	3,08	19,81	4,36	27,25	1,88	10,38	2,88	15,14	28	28	66	1,22	1,13	3,00	3,93	8,63	1,16	1,03	14,60	1,678	2,47	35,15	42,62	26,42		
1876-77	-	3,18	15,70	2,66	21,74	2,62	9,12	44	11,64	34	14	7	35	1,47	3,30	2,06	7,03	1,30	1,40	9,92	12,62	8,57	23,66	38,23	15,35		
1877-78	-	3,80	19,07	3,06	25,93	2,61	10,90	47	13,98	55	32	13	90	1,35	1,85	48	3,68	1,38	1,36	8,49	11,43	9,69	38,60	43,99	12,63		
1878-79	-	3,39	16,13	3,24	32,76	2,27	10,62	58	13,47	48	11	9	68	1,51	2,60	1,14	2,25	1,84	1,46	9,96	13,92	9,77	31,30	41,97	15,01		
1879-80	-	2,89	15,23	1,93	20,05	2,44	8,32	63	11,35	71	21	7	99	1,30	1,91	1,30	4,51	1,84	1,46	12,40	15,70	9,14	27,13	36,27	16,13		
1880-81	-	3,33	12,94	1,85	18,17	2,39	10,75	53	13,57	1,21	25	8	1,54	1,41	2,49	2,44	6,34	1,32	1,27	12,64	15,23	9,56	28,35	37,91	17,54		
1881-82	-	3,59	13,46	3,15	26,20	2,85	10,85	58	14,28	1,14	36	11	1,61	1,24	2,51	2,14	5,89	1,90	1,81	13,82	17,63	10,72	29,09	39,81	19,80		
1882-83	-	3,85	1	3,42	7,28	3,02	-68*	50	2,84	92	2	18	1,12	1,43	-	1,01	2,53	2,38	1	18,99	21,37	11,43	-64*	10,99	24,20	15,09	
1883-84	-	3,63	2	4,81	8,46	2,82	15	34	3,31	97	3	16	1,14	1,27	6	3,35	2,89	2,35	5	15,64	17,94	10,94	24	11,18	24,50	23,68	
1884-85	-	3,68	10	2,51	5,69	3,75	13	54	3,43	1,17	2	13	1,24	1,23	3	1,93	3,18	2,14	3	10,89	15,06	10,36	31	10,67	16,02	26,69	
1885-86	-	3,47	3	3,08	6,58	3,00	14	27	3,41	1,08	1	24	1,33	1,24	2	64	1,90	1,63	...	14,15	15,78	10,42	20	10,62	18,38	29,00	
1886-87	-	3,33	5	2,69	6,05	3,68	16	41	3,65	1,16	3	27	1,45	1,49	1	1,31	2,01	1,41	-2*	14,07	16,45	11,46	23	11,69	18,75	30,44	
1887-88	-	2,82	10	2,95	5,88	3,53	14	52	4,19	1,37	3	21	1,51	2,24	...	1,25	3,40	2,71	1	13,85	16,57	12,67	28	12,95	18,79	31,74	
1888-89	-	3,63	1,08	4,66	9,37	3,70	1,17	47	5,34	1,19	21	17	1,57	2,49	19	1,24	3,92	2,47	39	8,87	11,64	2,95	13,48	16,43	31,84	1638-89	
1889-90	-	3,50	1,85	3,57	9,92	4,06	90	22	5,08	1,39	26	21	1,66	2,40	2	1,62	4,04	2,16	73	15,23	18,13	3,51	37,76	17,27	21,35	38,53	1639-90

* The amount refunded is greater than the duty collected.

DEPARTMENT OF FINANCE AND COMMERCE,

STATISTICAL BRANCH;
Calcutta, 13th July, 1889.

E. J. SINKINSON,

Off. Secretary to the Government of India.

GOVERNMENT OF INDIA.

REVENUE AND AGRICULTURAL DEPARTMENT.

Circular No. 50 S.
63-5*Extract from the Proceedings of the Government of India in the Revenue and Agricultural Department (Surveys),—dated Simla, the 23rd July, 1889.*

Read—

The General Report on the Operations of the Survey Department of India for the year 1887-88.

R E S O L U T I O N .

The Survey Department was under the direction of Colonel H. R. Thuillier, R.E., throughout the year, and the report, which presents a record of varied and useful work in survey and exploration, indicates that the Department continues to be maintained in a state of high efficiency.

2. Field operations were prosecuted by twenty-six parties, of which one was devoted to Trigonometrical Surveys, six to Topographical Surveys, nine to Cadastral and Forest Surveys, six to Traverse Surveys, one to Geographical Surveys, and three to Geodetic and Tidal and Levelling Operations.

3. The Party employed on Trigonometrical Surveys completed the 370 miles remaining of secondary triangulation along the east coast of India. Secondary triangulation was also carried out for an aggregate length of 270 miles by the parties employed in Baluchistan as a basis for topographical surveys in that region. The work of the Geodetic Party comprised the measurement of seven arcs of longitude in Southern India; and the Tidal Survey Party continued its observations with self-registering tide gauges at the several stations along the coast where tidal observatories are established and the connected operations of spirit levelling.

4. Geographical Surveys and Explorations have been carried out vigorously in Upper Burma, with the result that triangulation has been extended over an area of 23,000 square miles, and that nearly 21,000 square miles have been surveyed and mapped on the $\frac{1}{4}$ inch scale. The Survey officers who accompanied the Hukong Valley Expedition on the Eastern, and the Black Mountain expedition on the Western Frontier, succeeded in mapping large areas in comparatively unknown country on both sides of India, while a valuable addition was made to the geographical knowledge of Afghanistan and its borders by the Native Surveyor deputed with the Afghan Boundary Re-rectification Commission. A reconnaissance along the Nepal boundary has supplied a rough basis for a more accurate and detailed survey of the northern frontier when opportunity offers; and interesting additional information regarding Bhutan and Thibet has been obtained from the adventurous travels of native explorers trained and sent thither by the Survey Department. On the whole, the work accomplished during the year in Geographical exploration is satisfactory, and shows that this important and difficult section of the duties of the Department has received a full share of attention.

5. The number of parties devoted to Topographical and Forest Surveys within India was reduced from eight to six, one party having been transferred to Upper Burma for Geographical, and the other to the Central Provinces for Forest Surveys. Belgaum, Dharwar, and Guzerat in Bombay, and Madura and the Native States of Travancore and Cochin in Madras, were the field of operations in the Southern Presidencies. The Party in Madras took over the Topographical programme from the Provincial Survey Department, and by thus relieving the latter of this class of work enabled it to extend the surveys required for purposes of settlement. In Northern India the Military Surveys in Baluchistan on the

$\frac{1}{2}$ inch scale were continued; and a Party in the Punjab operated in Kangra and the Simla Hill States, and provided in the British districts within these tracts a skeleton traverse or frame, which it is intended that the Settlement Department should fill in, for purposes of land assessment in accordance with the system advocated in the eighth and ninth paragraphs of the Survey Resolution of 1882. New Topographical maps were also constructed for a large area in the Punjab by the Traverse party employed in that Province; and a Topographical section, working in conjunction with a Cadastral party, completed the survey of the district of Mirzapur in the North-Western Provinces. The aggregate outturn amounted to 15,673 square miles, forming a substantial addition to the data in course of collection for the new maps which are constantly being required for purposes of general administration.

6. Forest Surveys conducted by the Survey of India Department were carried out in the Central Provinces, Lower Burma, the North-Western Provinces, Orissa, and Bombay. The outturn in the forests of Hoshangabad in the Central Provinces was small, as is usual in initiating operations in a difficult and unhealthy tract. In Burma the absence of disturbances enabled a larger area to be surveyed. In the North-Western Provinces and Orissa the Forest Surveys were performed by parties employed on cadastral work, and in Bombay by the two Topographical parties engaged in the Presidency. Under recent arrangements with the Government of Bombay one of these parties will in future be exclusively employed on the survey of Government Forests, and will compile complete maps on a 4 instead of an 8 inch scale. This change, while admitting of a larger outturn of work, will not affect the value of the maps for the purposes of forest management, for which they are primarily needed.

7. In pursuance of the programme laid down four years ago, the greater part of the available Survey force is now devoted to work designed to combine the requirements of Revenue administration with the demands of Cartography. Under this head may be included the Forest Surveys, already referred to, as well as Cadastral and Traverse Surveys, which occupied thirteen out of twenty-six parties. The diversion of what may be termed unremunerative to remunerative work is indicated by the following table in which the classification of the several parties employed in 1884-85 and 1887-88 is based upon the character of the work upon which they were employed. The first term "necessary" implies that, for military or administrative purposes, the survey is urgently required. The second term "unremunerative" comprises topographical surveys, which can be postponed without great inconvenience to the Administration.

	1884-85.			1887-88.		
	Necessary.	Unremunerative.	Remunerative.	Necessary.	Unremunerative.	Remunerative.
Number of parties...	8	11	7	11	2	13
Total Cost Rs.	(a) 3,02,000	7,15,000	8,66,000	(a) 4,72,000	1,43,000	13,65,000

(a) Exclusive of cost of 4 Scientific Parties (Coast Triangulation, Tidal and Levelling and Astronomical).

Taking Cadastral and Traverse Surveys together, the area covered during the year was upwards of 25,000 square miles. These extensive operations will aid materially in securing the punctual assessment of large tracts of country in which the settlement engagements are about to expire; and the Government of India desires to record its appreciation of the cordiality and zeal with which the Survey Department has lent itself to carrying out the programme, imposed upon it by pressing fiscal and administrative considerations in this important section of its duties.

8. Cadastral Surveys, involving the plotting of interior details, have been restricted to tracts where no village maps and no village officials trained in survey at present exist, or where, owing to the inferior training of the village staff, the existing village maps have become inaccurate and obsolete. Seven parties were thus employed in the Central and North-Western Provinces, Assam, Burma, and Bengal; and the aggregate outturn was 5,435 square miles. The system pursued varied in each case; but in every instance measures are, as far as possible, being taken to train the local and permanent officials to assist in the work and to maintain the maps and records provided by the professional survey.

Owing to the necessity for adapting the plan of operations to the widely differing conditions and circumstances of the tracts in which Cadastral Surveys were prosecuted, no useful conclusion can be drawn from a comparison of cost rates. But efforts have been continuously and systematically directed to reducing the cost to the lowest possible limits; and the average rate, which in 1884-85 was about Rs. 300 per square mile, is now brought down to something like Rs. 150 per square mile.

9. In Traversing, the principal field of operations continued to be the Central Provinces, where five parties were engaged in providing skeleton plots on the 16 inch scale, and completed 14,287 square miles. These plots are intended to furnish a scientific framework and check for the field survey by trained village officials, which follows. The only other Province in which Traversing formed the special work of a Survey party was the Punjab, where one party was employed and furnished skeletons for 5,795 square miles. In this case the object of the survey was to provide correct outlines for new Topographical maps, the details being taken from the village maps compiled by the Land Record establishment, on the accuracy of which the traverse at the same time serves as a check. The average cost of Traverse surveys did not much exceed Rs. 20 per square mile.

10. It remains to notice the good work done by the Head Quarters Offices. Of new maps, 4,062 were published during the year, and heavy demands continued to be made on the Drawing Office for trans-Frontier maps and maps of Upper Burma. The Photographic and Lithographic Offices show the large outturn of 1,203,861 copies issued during the year, which is in some measure due to requisitions for high class illustrations for archaeological and other reports, for the production of which the copying processes perfected in the Photographic Office are admirably adapted. The transactions of the Mathematical Instrument Office also increased; the number of instruments supplied being 57,293, and of those received into store, 70,093.

11. In his concluding remarks in Part I. of the Report, the Surveyor General alludes to the difficulty of providing officers to superintend the various field operations, and the necessity of further recruitment in view of the large number of prospective retirements. These matters are under the separate consideration of the Government of India.

ORDER.—Ordered, that the foregoing Resolution be forwarded to the Surveyor

Madras. Bombay. Bengal. North-Western Provinces and Oudh.	Punjab. Central Provinces. Burma. Assam. Coorg.
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General of India; to the Local Governments and Administrations noted on the margin; and to the Foreign and Military Departments.

Ordered also, that it be published in the Supplement to the *Gazette of India*.

(True Extract.)

E. C. BUCK,

Secretary to the Government of India.

GOVERNMENT OF INDIA.

REVENUE AND AGRICULTURAL DEPARTMENT.

WEATHER SUMMARY FOR JUNE 1889.

General Weather conditions of month.—The chief feature of the month is the gradual advance of the south-west monsoon humid currents from the Arabian Sea and Bay of Bengal over India. As stated in last month's report, partial advances occur in the month of May over portions of Southern India and Tenasserim, but it is usually not until the last week of May or the first week of June that the great advance occurs which finally terminates in the establishment of the monsoon over India. It advances with more or less regularity northwards up the Arabian Sea and the Bay of Bengal, and thence extends over the interior of India. The rate and manner of advance depend very largely upon the pressure and other weather conditions prevailing at the time in India. Excessive temperature usually prevails over the whole of Central and Northern India at the commencement of the month. The advance of the monsoon currents over the interior increases the humidity and gives rise to more or less cloud. Hence temperature falls, and the area of excessive temperature retreats north-westward into Sind, the West Punjab, and North-West Rajputana, where temperature remains permanently high throughout the whole of the monsoon, and the highest maximum temperatures of the year are frequently recorded in that area in June and July, and even in August.

This great change from great heat and dryness to moderate heat, excessive humidity, and frequent rain showers is usually not completed over Northern India until the third or fourth week of June, by which date the monsoon currents have penetrated into the Upper Punjab.

Weather is always more or less squally in front of the advancing monsoon currents up the Arabian Sea and Bay of Bengal; and this squally weather frequently develops into a cyclonic, storm which carries the first heavy burst of monsoon rainfall, as it were, with it in its rear.

Again, after the south-west monsoon winds are fully established, there is a marked tendency to the formation of small cyclonic storms in the Bay of Bengal and in Bengal (more especially East Bengal). These small cyclonic storms form one of the more conspicuous features of the rains proper. In June and July they usually advance in a west or west-north-west direction across the head of the Peninsula, and give heavy rain over the area they traverse. As they draw away the rain for the time being from other districts and concentrate its fall over the narrow area they traverse, they are one of the chief causes of the irregular distribution of the monsoon rainfall. This effect is exaggerated by the tendency of these cyclonic storms to follow the same general path during the months of June, July, and August, or during the height of the monsoon.

Cyclonic storms and barometric depressions of the month.—The following are the more important depressions of the month:

(1) *Depression and cyclonic storm in the Arabian Sea of June 1st to 9th.*—This storm was formed in front of the south-west monsoon current as it advanced northwards along the West Coast of India. Heavy rain began to fall on the Malabar Coast on the 30th and 31st, and weather was very squally off that Coast. On the 2nd, heavy rain had extended northwards to Ratnagiri, and the wind directions at the West Coast stations indicated that the squally weather in front of the advancing humid current had developed into a cyclonic storm, the centre of which on the morning of the 2nd was to the west-south-west of Goa. Very heavy rain fell along the West Coast on the 3rd, and the centre of

the storm on the morning of the 4th was west of Ratnagiri. The depression at the centre was now considerable, as pressure at Goa and Bombay was a sixth of an inch below the normal. The depression continued to advance slowly northwards and to deepen. On the morning of the 5th the centre was west of Bombay, where the barometer was a quarter of an inch below the normal. The storm now covered the angle between the Kathiawar and Bombay Coasts, and it was blowing a heavy gale on the Konkan Coast. The average wind velocity at Bombay on the 6th was 37 miles per hour and on the 7th 33 miles per hour. The storm either filled up slowly on the 8th off the Kathiawar Coast or recurred to north-west or west. No reports have been received as yet from ships of the weather at this time in the Arabian Sea; but, so far as can be judged from the Kurrachee observations, the storm drifted to the north-west and marched parallel to the Kathiawar and Sind Coasts on the 8th and 9th. It probably filled up as it advanced and broke up in the neighbourhood of the Makran Coast west of Kurrachee on the evening of the 9th. The chief feature of the storm was the very heavy burst of rain which the westerly winds in the south quadrant gave to the West Coast districts. The following gives the total rainfall received during this period at several of the West Coast Ports:

STATIONS.	RAINFALL OF 24 HOURS PRECEDING 8 A.M. ON*							Total Rainfall of Weeks.
	June 1st.	June 2nd.	June 3rd.	June 4th.	June 5th.	June 6th.	June 7th.	
Cochin	3.24	0.83	0.10	2.61	2.79	0.39	3.92	13.88
Calicut	1.47	0.73	1.10	4.43	1.50	3.49	6.62	19.34
Mangalore	0.02	2.76	2.12	5.40	3.40	3.04	4.08	20.82
Karwar . . . .	...	0.55	3.92	5.10	7.30	5.60	10.15	32.62
Goa . . . .	...	0.14	1.46	6.00	5.06	5.28	3.22	21.16
Ratnagiri	0.01	2.77	...	0.20	2.56	3.72	0.06	9.32
Bombay . . . .	...	...	0.05	...	...	0.07	5.80	5.92

(2) *Depression and small cyclonic storm of 9th to 14th of June.*—Weather was unsettled and squally in the south of the Bay at the commencement of the month. A very small depression was in existence off the Coromandel Coast on the morning of the 2nd. It apparently advanced slowly northwards without showing any sign of further development until the morning of the 9th, when it covered the north-west of the Bay, off the Orissa and Ganjam Coasts. The centre was probably east of Gopalpore on the morning of the 9th, and east of False Point on the morning of the 10th. The depression at the centre was very small, and winds were probably only of moderate intensity in the southern quadrant. The centre at 8 A.M. of the 11th was midway between False Point and Saugor Island. It continued to advance northwards, and was between Burdwan and Berhampore on the 12th. It drifted slowly through Central Bengal on that day, and the centre was to the south-west of Dhubri on the 13th. The storm disappeared before morning of the 14th. It was hence throughout a diffused storm of feeble intensity, and was remarkable for its slow progression northwards, at a rate probably never exceeding 5 miles per hour. This storm carried the south-west monsoon current up the Bay, and general rain began to fall in Bengal on and from the 9th. The breaking up of the Arabian Sea storm, which also occurred on that day, was followed by a rapid advance of westerly humid winds and general rain over nearly the whole of Central and Upper India on the 10th and following days. The present storm gave very heavy rain on the Arakan Coast and moderate rain to Bengal. The following are some of the heaviest